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## THE PLAGUE SITUATION.

### PORTO RICO.

Since August 27 four cases of plague have been reported in Porto Rico. A case in San Juan reported as suspicious on August 29 was finally diagnosed as plague on September 2; one case occurred in Santurce September 3, one case in San Juan September 4, and one in Santurce September 5. This makes the total number of cases reported to the present time 53. Since July 19 no case has occurred outside the municipality of San Juan, which includes the old city of San Juan, Puerta de Tierra, and Santurce.

### NEW ORLEANS, LA.

From July 17 to August 28, 2,978 rats were collected in New Orleans. Of these, 2,976 were examined to ascertain the presence of plague. The only plague-infected rat which has been found was the one reported on July 27, as having been caught on the water front. This rat, however, had been caught 11 days before—that is, on July 18.

### CALIFORNIA.

In California plague still persists among the ground squirrels, and among those caught each week are usually found some infected ones. Recently these have all been found in Contra Costa and Alameda Counties. No human case of plague, however, has occurred in California since September 18, 1911—that is, nearly a year ago. This case occurred in San Joaquin County. It has now been nearly three years since a plague-infected rat has been found in either San Francisco or Oakland. To protect these cities from reinfection of the rats by the infected ground squirrels in the surrounding rural territory, a squirrel-free zone has been maintained around the cities on San Francisco Bay. This zone is maintained free from squirrels by shooting, poisoning, and constant policing.

### FOREIGN.

The principal foreign places where plague is now epidemic are certain Chinese ports, of which the more important are Amoy and Hong-kong; lower Egypt, India, the Island of Formosa, certain localities in Persia and certain localities in Russia. In South America cases have recently occurred in Brazil, Chile, Ecuador, and Venezuela. The disease is also present on the Island of Trinidad, and in South Africa in Durban and vicinity.

## YELLOW FEVER.

In Mexico yellow fever has been present in Merida since August 1, 1911. During this time there have been reported 68 cases with 32 deaths. In San Juan Bautista in the State of Tabasco, there were between May 4 and August 10, 1912, a total of 53 cases of yellow fever with 22 deaths reported. The disease has now made its appearance in Frontera, a port of Tabasco, 55 miles from San Juan Bautista. It presumably was carried from San Juan Bautista by troops transferred to Frontera, where it is reported to be now epidemic. Acting Asst. Surg. J. F. Eaves has been assigned to temporary duty in the American consulate at Frontera for the purpose of fumigating vessels and performing other necessary quarantine work on vessels prior to their departure for United States ports.

In Brazil cases have, during the summer, appeared in Manaus and Pernambuco. In Chile a severe epidemic has occurred at Tocopilla. Cases have also occurred in Colombia. In Ecuador the disease has been present in a number of localities. It has also been reported in Peru at Iquitos, where the disease has been endemic for years. It has also been present in a number of localities in Venezuela.

There are localities in tropical South America and on the west coast of Africa, and undoubtedly also in Central America and southern Mexico, where yellow fever is endemic and has become a disease of childhood. Native adults in these localities usually possess an immunity acquired by infection in early life. The disease, however, exacts a heavy toll among nonimmunes coming from uninfected territory, and these endemic foci are a constant menace to all infectible localities having commercial relations with them.

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 CHOLERA.

Cholera has been reported on the island of Sardinia. The cases, it is stated, have been confined to the Province of Cagliari, where, from August 14 to 27, there were officially reported 16 cases with 5 deaths. Inasmuch as a large number of immigrants come from southern Italy to the United States, the quarantine officers at the ports at which vessels arrive from there have been notified of the occurrence of cholera and instructed to make careful examinations of all vessels coming from Italian ports.

In Russia, from July 14 to 27, cholera was reported as follows:

The city of Astrakhan, 4 cases; the city of Vitebsk, 9 cases; the district of Vitebsk, 2 cases.

Cholera is also present at Beirut, Syria.

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 A NOTE ON ACID-FAST BACILLI IN HEAD LICE (PEDICULUS CAPITIS).

By GEORGE W. MCCOY, Passed Assistant Surgeon, Director, and MOSES T. CLEGG, Assistant Director, Leprosy Investigation Station, United States Public Health Service, Honolulu, H. T.

Several observers have reported the presence of acid-fast bacilli in various insects taken from lepers. With the exception of Ehlers, Bourret and With<sup>1</sup> who report doubtful organisms of this nature in

<sup>1</sup> Ehlers, Bourret and With, "Rapport d'ensemble sur les travaux de la Mission dano-française d'étude de la Lèpre aux Antilles danoises 1909," Archiv für Dermatologie und Syphilis, vol. 106, p. 193.

a louse which had fed on a leproma four and one-half hours previously, the results with these insects have been negative.

In some recent work in connection with the study of the possibility of the transmission of leprosy by animal parasites, we found a large number of acid-fast bacilli in smears made from two lice (*Pediculus capitis*) taken from an advanced case of nodular leprosy. In morphology, grouping, and tinctorial characteristics, the organisms found in these insects were indistinguishable from the leprosy bacillus. There was a leproma on the forehead adjacent to and invading the scalp. It is well known that the invasion of the scalp by the lesions of leprosy is rare.

We have examined lice from several other cases of leprosy but with uniformly negative results.

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## ROCKY MOUNTAIN SPOTTED FEVER.<sup>1</sup>

By W. C. RUCKER, Assistant Surgeon General, United States Public Health Service.

### HISTORY.

For over a decade Rocky Mountain spotted fever has been a problem of great interest to the physician, the zoologist, and the sanitarian. Its geographic limitation, seasonal prevalence, intimate association with wood ticks, and variation in severity in different localities combine to make it one of the most interesting and intricate disease problems which have arisen in our generation. It has a peculiar interest, because apparently it is confined to the American Continent, and it has therefore been considered appropriate to present a brief review of the progress in the study of the disease and to indicate the lines along which investigative and eradivative work should be carried in the future.

Although the disease has been known in Idaho and Montana since 1873, the first specific reference to it in literature is to be found in the report of the Surgeon General of the Army for the fiscal year ending June 30, 1896 (77). It is there stated that "the surgeon<sup>2</sup> at Boise Barracks referred in one of his monthly reports to the prevalence of spotted fever in the civil settlements in the neighborhood of the post. On being requested to give fuller particulars concerning this fever, he stated that as he had not seen any of the cases that occurred he had called upon his medical friends in civil life for information." These gentlemen (Drs. C. L. Sweet, W. D. Springer, R. M. Fairchild, L. C. Bowers, J. K. Dubois, D. W. Figgins, and H. Zipf) responded promptly and their reports constitute the first published accounts of Rocky Mountain spotted fever as a disease entity.

It was not until 1899, however, when Dr. E. E. Maxey, of Boise, Idaho, read a paper entitled "Some observations on the so-called spotted fever of Idaho" (32), before the Oregon State Medical Society, that the disease began to attract any wide spread attention. This lucid paper expresses the opinion that spotted fever is a specific disease and gives an accurate description of its clinical manifestations.

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<sup>1</sup> This paper originally appeared in the *Military Surgeon*, Vol. XXIX, No. 6, Dec., 1911, pp. 631-657 under the title, "The problem of Rocky Mountain spotted fever." As republished here the text and bibliography have been amended so as to cover the subject to the present time.

<sup>2</sup> Then Capt. (now Lieut. Col., Deputy Surg. Gen., retired) Marshall W. Wood, M. C., U. S. A.

In 1902, the then newly organized Montana State Board of Health selected for its first task the careful investigation of the disease, securing for this purpose the services of Drs. L. B. Wilson and W. M. Chowning of the University of Minnesota. Their work, which was done in the Bitter Root Valley of Montana, constitutes the first serious laboratory study of the disease (12, 73, 74, 75, 76), and in a paper written July 1, 1902 (73), they suggested the rôle of the ground squirrel (*Citellus columbianus*) and the tick (*Dermacentor andersoni*) as host and vehicle of transmission, respectively. In the same year Surg. J. O. Cobb of the United States Public Health Service, visited the Bitter Root Valley and wrote a description of the disease (13). Subsequent investigations have been made by Ashburn (5, 6, 7), Craig (7, 16), and Keiffer (26), of the Army; Anderson (1, 2, 3), Stiles (65-71, inclusive), Francis, King (27), and McClintic (36) of the Public Health Service; and by several others, the most noteworthy among whom are the martyred Ricketts (42-55, inclusive), and his associates.

GEOGRAPHIC DISTRIBUTION.

The disease has been reported from nearly all the States in the Rocky Mountain Group, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming, each having foci. Cases have also been reported from the District of Alaska. The geographic distribution of the disease is shown as follows in tabular form:

*Geographic distribution of Rocky Mountain spotted fever.*

States.	Locality.	Reporter.
Alaska.....	Klondike.....	Gwinn (21).
California.....	Calneva.....	Snow. <sup>1</sup>
Colorado.....	Carbondale.....	Braden (57).
	Rifle.....	Le Rosignol and Hotopp (57).
Idaho.....	Valleys of the Weiser, Payette, Boise, and Wood Rivers; north bank of the Snake River; south-western Idaho.	Maxey (32).
Montana.....	West side Bitter Root Valley.....	Wilson (73) and Chowning; Anderson (1); Stiles (65); McClintic (36).
	Phillipsburg, Clinton, Camas Prairie.....	Anderson (2).
	Rock Creek, Blackfoot, Rattlesnake, and Lolo Valleys.	McCullough (37).
	Bridger.....	Gates (2, 67).
	Livingston.....	Alton (65).
Nevada.....	Quinn River Valley.....	Kendall (2).
	Paradise Valley, Winnemucca, Fort McDermitt, Reno.	Robinson (57).
Oregon.....	Burns.....	Geary (19).
	Lakeview.....	Steiner (57).
	Merrill.....	Patterson (57).
Utah.....	Cedar Valley, Fairfield, Cedarfort.....	Noyes (57).
	Heber City.....	Wheritt (57).
Washington.....	Moses Lakes, Douglas County.....	Smith (62).
Wyoming.....	Thermopolis, Meyersville, Shoshone River.....	Gates (2, 67).
	Crow Creek.....	Kieffer (26).
	South Pass, Fort Fetterman, Fort Steele, Cheyenne.	Robinson (57).
	Cody, Meeteese.....	Bradbury (76).

<sup>1</sup> Personal letter.

Data regarding the prevalence of Rocky Mountain spotted fever in the known infected localities is very sparse except in Montana and Idaho. In the latter State Dr. Edward E. Maxey, of Boise, collected data on 380 cases which occurred during 1908. The following table

shows the occurrence of the disease in the Bitter Root Valley from 1885 to 1911, inclusive, representing data collected by Wilson and Chowning, Anderson, Stiles, and McClintic:

*Human cases of Rocky Mountain spotted fever in the Bitter Root Valley of Montana.*

Year.	Cases.	Deaths.	Case fatality rate.	Year.	Cases.	Deaths.	Case fatality rate.
			<i>Per cent.</i>				<i>Per cent.</i>
1885.....	1	1	100	1900.....	12	9	75
1886.....	1	1	100	1901.....	14	10	71.4
1887.....	0	0	0	1902.....	21	15	71.4
1888.....	3	1	33.3	1903.....	14	9	64.2
1889.....	3	3	100	1904.....	11	9	81.8
1890.....	1	1	100	1905.....			
1891.....	6	4	66.6	1906.....			
1892.....	3	1	33.3	1907.....			
1893.....	4	2	50	1908.....	12	5	41.6
1894.....	0	0	0	1909.....	28	13	46.4
1895.....	3	3	100	1910.....	19	14	73.6
1896.....	6	6	100	1911.....	16	6	37.5
1897.....	6	5	83.3	1912.....	1	1	100
1898.....	3	2	66.6	(1).....	4	2	50
1899.....	23	14	60.8				

<sup>1</sup> Year not definitely known.

It might be well to point out at this time the necessity for the careful collection of data regarding the occurrence of cases in the various infected States. Rocky Mountain spotted fever certainly should be put on the list of reportable diseases.

#### SYMPTOMS IN MAN.

Passing now to the consideration of the clinical aspects of the disease in man, Maxey's definition of the disease may be modified to read, "Rocky Mountain spotted fever is an acute, endemic, febrile disease, occurring chiefly during the summer months, transmitted by the bite of the tick, and characterized clinically by a continuous moderately high fever, severe arthritic and muscular pains, and a profuse petechial or purpuric eruption in the skin, appearing first on the ankles, wrists, and forehead, but rapidly spreading to all parts of the body."

After an incubation period varying from 3 to 10 days, usually 7, during which the patient may feel indisposed and complain of ill-defined sensations of cold, nausea, and weariness, there is a frank chill. If seen at that time the patient will generally complain of pain and soreness in the muscles, bones, and joints, especially in the lower lumbar region. Severe occipital headache and photophobia are frequent symptoms and the face may appear flushed and swollen. Epistaxis commonly occurs and constipation is the rule. The severity of the symptoms varies in individual cases and is less severe in Idaho than in Montana.

Upon examination the face is apt to be flushed, and the conjunctivæ congested and yellowish. The tongue is covered centrally with a heavy white coat, while its tip and edges are bright red. A slight bronchitis may exist, and the urine is scanty and may contain small amounts of albumin and a few casts. Prior to the initial chill

there may be a little afternoon fever, but with the chill there is an abrupt elevation of temperature and on the successive days there is an evening rise with slight morning remissions. At any time from the eighth to the twelfth day, usually the tenth, the fastigium is reached, when, if the patient is to recover, a fall by lysis takes place, the curve reaching subnormal from the fourteenth to the eighteenth day and remaining so for three or four days. In certain of those cases which do not recover there is a continuous fever of 105° F. or higher. In other cases there is a sharp drop in the temperature curve, followed by a sudden rise just before death.

The pulse is very rapid and apt to be thready. There is a progressive decrease in the erythrocytes and hæmoglobin. A leucocytosis with considerable increase in the large mono-nuclears occurs.

The respiration rate is increased in proportion to the pulse. An initial bronchitis is not uncommon and hypostatic pneumonia sometimes occurs.

Usually on the third day (sometimes on the fourth) the eruption appears on the wrists and ankles, first as a macular roseola, which, as it spreads to the arms, legs, forehead, back, chest, and abdomen, in the order named, becomes papular and may terminate in indefinite blotches or petechiæ which may become large ecchymotic spots. In severe cases even the palms, soles, and scalp may be invaded. From 12 to 48 hours are required for the rash to reach the maximum. The macules vary in size from a pin point to a split pea and are bright red except when the case is unusually severe, when they are dark purple. Not infrequently they assume this color after death. It was this sign which caused the earlier cases to be called "the blue disease" or "black measles." The macules disappear readily on pressure, rapidly to return—the papules do not disappear on pressure until the patient is progressing to recovery. With the fall in the fever, the eruption begins to fade, but for a considerable time after recovery it may reappear as a subcuticular mottling after free perspiration or a warm bath. Cases have been reported in which there was no exanthem. Late in convalescence there is a generalized desquamation. Gangrene of the ears, fauces, fingers or toes, scrotum, penis, or entire pudenda may occur as distressing sequelæ. Hæmatogenous jaundice usually occurs and in addition the face may have a bloated appearance, erasing the lines of expression and giving it a stupid look.

The teeth are covered with sordes early and the tongue is coated throughout the disease. This coating is at first white, but later it becomes light yellow and finally dirty brown. The mouth is dry and cracked. Constipation, sometimes extreme, exists throughout the disease. Initial nausea, which may extend throughout the disease, is not uncommon. There is splenic and hepatic enlargement.

The urine is high colored, acid, and reduced in amount. Albumin and granular, hyaline and epithelial casts are found in about 50 per cent of the cases. Hemoglobinuria almost never occurs.

The mind is usually clear throughout the disease. During the period of invasion there may be restlessness and insomnia owing to the attendant pain in the bones and muscles. Later this is absent. Kernig's sign is not found. Ocular symptoms are very rare.

## SYMPTOMS IN ANIMALS.

The reactions which occur when laboratory animals are inoculated with the disease are fairly constant. Guinea pigs when given 0.5 c. c. to 5.0 c. c. of defibrinated infected blood, serum, or washed corpuscles, subcutaneously or intraperitoneally, present a rise of temperature after an incubation period varying from two to five days. From the fifth to the seventh day the temperature may reach 107.6° F. Coincident with the fastigium, the scrotum and testicles become swollen and œdematous, and subsequently the overlying skin of the pudenda becomes the seat of hypodermic hemorrhages of varying size and outline. Vulvar changes occur in female guinea pigs, but are less constant. The soles of the feet and the ears are red and congested, and if the animal be depilated, reddish macules may be observed on the dorsal and lateral aspects of the body. Emaciation is rapid, and death usually occurs from the seventh to the eleventh day. Recovery, when it takes place, is gradual and may be accompanied with scrotal sloughing, followed by deforming cicatrix formation. There is desquamation of the soles of the feet, and the ears become dry and brittle, subsequently dropping off, leaving a short, thickened, irregular stump. The animal is emaciated and may not regain its normal weight for several weeks. When the disease is transmitted by ticks the signs are much the same, except that there may be areas of necrosis and patchy alopecia at the points where the ticks attached.

In monkeys (*Macacus rhesus*) the disease produces cyanosis of the face and ears, a skin eruption varying from an erythema to a macular and petechial marking distributed over the external aspects of the arms, legs, buttocks, and back. The scrotum and penis are enlarged and hæmorrhagic.

The rabbit (*Lepus sp.*) is mildly susceptible to the virus, but in far less severe form than in guinea pigs and monkeys. After an incubation period varying from three to six days, the temperature reaches 104° F. and falls by lysis. Aside from congestion of the scrotum no marked anatomical changes have been recorded. The susceptibility of the various domestic animals and the mammals of the infected zone will be discussed elsewhere.

## PROGNOSIS.

In the Idaho cases the prognosis seems to be very favorable, as a rule the case fatality rate averaging less than 4 per cent. The disease is far more lethal in Montana, and there the case fatality rate averages close to 75 per cent, although in some years it has fallen as low as 33.3 per cent. Death may occur as early as the third or as late as the eighteenth day of the disease. In general, if the patient survives the tenth day, the prognosis is far more favorable. Continuously high fever or a sudden drop in temperature are grave signs, as is also delirium or loss of consciousness.

## GROSS PATHOLOGY.

The pathological changes are not extreme, but they are fairly characteristic. In man rigor mortis usually appears early and is intense. The skin changes observed at necropsy are practically the same as those seen ante mortem and include the small wounds the result of tick bites. Icterus is constant and cutaneous hemorrhages of varying sizes and shape are usually seen. In the Idaho cases gangrene of the fauces, tonsils, and palate, and of the scrotum, penis, and vulva have been noted. Aside from occasional hypostatic congestion and a rare pneumonia, the respiratory apparatus is usually normal. Epicardial hemorrhages over the ventricles were constantly found in Anderson's cases (2). The heart muscle is flabby, soft, and pale. The right heart is usually full of firmly coagulated blood, while the left heart is contracted and empty. The spleen is usually enlarged to three or four times its normal weight, is dark purple, soft, and very friable. The liver is enlarged and shows cloudy swelling and fatty degeneration. The pancreas is about twice its normal weight. The intestines may show submucous hemorrhages. Le Count (28) notes the enlargement of the superficial and visceral lymph glands. The kidneys are usually enlarged and present subcapsular and pelvic hemorrhages. The other abdominal viscera are not markedly affected. The changes in the nervous system are not constant enough to be of value in the post-mortem diagnosis of the disease.

In guinea pigs the pathological changes noted include coagulation necrosis about the site of inoculation; enlargement of the superficial lymph glands, with central hemorrhages and degeneration; splenic and hepatic changes similar to those observed in man; enlargement of the suprarenal bodies; localized haemorrhages with necrosis of the pudenda; and gangrenous changes of the ears. The lesions in monkeys are practically identical with those observed in man.

## MICROSCOPIC PATHOLOGY.

The microscopic "changes are of two sorts, those connected with the occlusions of vessels and the more diffuse lesions affecting entire groups of organs. The diffuse changes are hyperplasia of lymphoid tissues and cloudy swelling and acute fatty changes in organs commonly the seat of such lesions in acute infectious diseases. The focal lesions are more varied in their nature, since they include not only the processes leading up to the occlusion of vessels, but the results of such obstructions, necrosis in different degrees and the hemorrhages responsible for so many of the clinical and gross anatomic features of the disease as well as for the name 'spotted fever' (28)." The minute changes have been made the subject of a careful study by Le Count (28) to whose article the reader is referred.

## TREATMENT.

Many methods of treatment have been advised and employed in the attempt to cure this disease. They run the gamut of the Pharmacopœia from sage tea to quinine and they have returned to that tacit admission of ignorance "good nursing and symptomatic medication." Ricketts (53, 55) has produced a protective (and if given

very early, and in large doses, curative) serum which Heinemann and Moore (22) have attempted to concentrate. The number of cases in which it has been used is too small to judge of its efficacy. Dr. Karl Kellogg, of Stevensville, Mont., and Dr. J. Wilson Reed, of Victor, Mont., have each used sodium caccodylate with apparent success in a single case. McClintic (36) treated monkeys infected with Rocky Mountain spotted fever with sodium caccodylate, salvarsan, and urotropin. None of these agents seemed to exert a beneficial effect on the disease. Until we are better informed as to the etiology of the disease all attempts at its cure must be empirical and groping.

#### ETIOLOGY.

When we attempt the consideration of the etiology of this disease we are in a certain measure entering a terra incognita. As noted by Maxey (32), in his original paper, spotted fever is a "place" disease, being definitely limited to a certain locality—for example, to a single side of a valley. It is also rather sharply limited to a definite season of the year, usually to the months of March, April, May, June, and July. It attacks all ages and both sexes, although the greater number of cases have occurred in males between 30 and 40 years of age. Persons whose occupations take them into the wooded foothills seem more liable to the disease; therefore the bulk of the cases have occurred in lumbermen, miners, prospectors, ranchers, and sheepherders, and bridge builders, carpenters, civil engineers, and others concerned in railroad construction work. It is apparently noncontagious, more than a single case rarely occurring in a given household at the same time. It has been impossible to incriminate water or food of any kind as the vehicles of infection, although when Maxey presented his first paper he suggested that the drinking of snow water might be the means of receiving the disease.

#### THE TICK HOST.

Wilson and Chowning in their original report (73) suggested the hypothesis that the wood tick (*Dermacentor andersoni*) acted as the transmitting agent and offered in support of this theory several facts which may be thus summarized:

1. The appearance of the disease is coincident with the period of activity of the wood tick.
2. The disappearance of the disease is coincident with the disappearance of the wood tick.
3. The limitation of the disease in a certain locality suggests the conveyance of the germ to man by a temporary parasite "traveling slowly and not widely and which is not carried far by the wind. The tick answers this description."
4. The great bulk of patients give a history of having been bitten by ticks prior to their illness.
5. Mosquitoes may be eliminated from the problem because their appearance and disappearance does not coincide with that of spotted fever; because of their lack of geographic limitation; and because they would be more apt to bite and thus infect a greater number in a given family. Bedbugs and fleas are omnipresent and perennial; spotted fever is not.

Cobb (13), Anderson (1, 2), Westbrook (57), and R. W. Smith (57) coincided in this view, but Stiles (65) was "unable to confirm this hypothesis." Ashburn (5) reached the same conclusions as Stiles.

In 1906, King (27) succeeded in transmitting the disease from one guinea pig to another guinea pig by an adult male tick and Ricketts

(42-47) was able to similarly transfer the infection by an adult female tick. In the following year, 1907, Ricketts (46) demonstrated that infected ticks exist in nature on the west side of the Bitter Root Valley of Montana and by their bites he reproduced the disease in guinea pigs. He further showed that the larvæ and nymphs and both adult male and female ticks infected by feeding on an infected animal may transmit the disease to normal susceptible animals; that larvæ and nymphs may acquire the disease in a similar manner and that they are capable of transmitting it in their subsequent stages of development; that infected females may transmit the disease to their young through their eggs; that the infection is generalized in the body of infected ticks; that the virus remains active in the body of the nymphal tick; that infected ticks are infective as long as they live and will bite. From the foregoing it may be deduced that the tick is the disseminator of the casual agent of the disease in nature. As a final and clinching proof, McCalla (35) removed a tick from a man suffering with the disease and, with their consent, infected a man and a woman by its bite.

Since it has been proven that the disease exists in ticks in nature, it is to be expected that the distribution of the disease is the same as the distribution of the dermaceator. This has been made the subject of a study by Bishop (9) and while Rocky Mountain spotted fever has not been reported from the entire life zone of this tick, with the exception of the cases which occurred in the Klondike, the disease has not been found outside the area which the tick infests. This includes the northern part of the Rocky Mountain region in the United States, and the river valleys and sagebrush plains to the west, the western corner of South Dakota, almost the entire States of Montana, Wyoming, and Colorado, the northern portion of New Mexico, Utah, and Nevada, all of the State of Idaho, the eastern half of Washington and Oregon, and the northeastern corner of California. It also occurs in southern British Columbia and eastern Alberta.

There has been more or less discussion regarding the taxonomy of this species, but that is a question for zoological nomenclaturists which need not be considered here, and it should be borne in mind that Maver (31) has transmitted the disease by three other species, *Dermaceator marginatus* (Utah), *Amblyomma Americanum* Linnæus (Missouri), and *Dermaceator variabilis* (Mass.). It may be of profit, however, to describe briefly the commonest form (*D. andersoni*) and to outline its life history.<sup>1</sup>

#### THE ANATOMY OF TICKS.

Ticks, superfamily Ixodoidea, order Acarina, class Arachnida, represent the giant mites. Anatomically a tick may be divided into a head, rostrum, or capitulum, and a body. The capitulum consists of a neck which connects it with the body; a hard, usually quadrangular portion called the base, which presents two porose areas and supports the palpi, which are composed of four segments, the hypostome, and elongated structure in symmetrical halves, which are covered with minute recurving teeth, and the mandibles

<sup>1</sup> The writings of Stiles (69-70) and Ricketts (42-56) have been freely drawn upon in the preparation of this description. For a more technical consideration of the subject the reader should consult Bull. 62, U. S. Public Health and Marine-Hospital Service, Hyg. Lab., 1910.

or biting apparatus. The body is more or less ovoid in shape and varies greatly in form, color, outline, and structure in the different species and at different periods of development. The body is divided for purposes of description into a dorsal surface, a ventral surface, and anterior, posterior, and lateral margins. The dorsal surface presents a hard, chitinous plate, marked by two longitudinal grooves. This is called the scutum and is smaller in the female than in the male. The eyes are seen at each lateral margin of the scutum, and on each side of the median line, near the third and fourth legs, are small, oval, chitinous structures called the dorso-submedian porose plates. Along the posterior margin of the body are the postero-marginal festoons, 11 in number. The ventral surface presents for examination the genital pore, situated between the coxæ of the first three pairs of legs; the anus, similarly situated in the median line but behind the posterior pair of legs; and the stigmal plates placed laterally just behind the fourth pair of legs. The anterior, posterior, and lateral margins vary in the different species. The legs are four in number on each side and each is segmented into a coxa, trochanter, femur, patella, tibia, and tarsus. Both the dorsal and the ventral surfaces present grooves, pits, hairs, and spines which are of value in distinguishing the various species.<sup>1</sup>

#### THE DERMACENTOR ANDERSONI.

The *Dermacentor andersoni* Stiles (1905), male is oval, narrow in front, broad behind, with scutum variegated brown and white. Anteriorly there is an elliptical area, called the pseudoscutum, limited by a white border and possessing two lateral brown stripes, with a median brown stripe or spots between them. Behind this there are 4 brown stripes arranged in a curve, open anteriorly. Posterior to these there are usually 5 brown stripes, 1 central and 2 on each side. Elsewhere the whole dorsum is speckled with small brown dots. The 11 festoons of the posterior border are roughly quadrangular in outline and consist of a white area with 1 brown spot and small brown specks. On the ventral surface, it is noted that the first coxæ arise by two roots, bidentate, while the others arise by a single spine. The fourth coxa is very large, being two or three times the size of the third. Opposite the second pair of legs is the genital aperture. The stigmal plates are somewhat comma shaped.<sup>2</sup>

The nonengorged female is about the same size as the male, 5 by 2.5 mm. The body is oval and broader posteriorly than anteriorly. The scutum extends as far back as the third pair of legs and is marked like the corresponding portion of the scutum of the male. There is a dorsal marginal groove and three longitudinal grooves. Eleven festoons on the posterior margin. The genital aperture on the ventral surface is opposite the second coxa, and from it the genital grooves run backward, diverging laterally behind the fourth coxa and ending between the second and third external festoons. There is a short anomarginal groove. The replete female is about 16 by 10 mm. and deep brown or slate color.

<sup>1</sup> For a description of the internal anatomy see Christophers (S. R.), *The Anatomy and Histology of Ticks*. Calcutta, 1906.

<sup>2</sup> See Stiles's "The taxonomic value of the microscopic structure of the stigmal plates in the tick genus *Dermacentor*." *Bull. 62, U. S. Public Health and Marine-Hospital Service, Hyg. Lab.*, 1906.

## LIFE HISTORY OF D. ANDERSONI.

The adult male and female feed in common on various mammals, and it is during this time that copulation and fertilization take place. The female continues to feed for several days after fertilization until she has become a slate-colored, swollen ovoid body. This increase in size is due to the ingestion of blood from the host and the enlargement of the ovaries and beginning formation of hundreds, or even thousands, of minute eggs. After complete engorgement, the female drops from the host and after a resting period of about two weeks begins oviposition. To accomplish this the head is bent ventrally until the capitulum rests on the edge of the genital opening. At the same time there is protruded from beneath the scutum a delicate white gelatinous membrane which terminates in two delicate cones covered with an adhesive secretion. The extrusion of this membrane covers the head, and as the two small sticky cones reach the genital orifice the egg is expelled onto them. The membrane is then withdrawn and the head extended, the egg resting on the front of the scutum. In this way an adherent mass of eggs gradually forms in front of the tick.<sup>1</sup> Unless observed closely, it appears as though the eggs were being extruded from beneath the scutum. As this process continues the tick begins to shrivel and at the end of oviposition it dies. The number of eggs deposited varies from several hundred to three thousand.

The length of time before the eggs begin to hatch depends on the surrounding temperature. In the summer months it is from 30 to 50 days, but in the cold season it may be delayed for several months. From the egg appears the larval form of "seed-tick" stage. These are minute specks, which are first pale and soft, and later become covered with a hard brown coating. They have six legs and are without genital and spiracular orifices. They are seen in nature in clumps on blades of grass or twigs, where they wait with outstretched legs for passing mammals. Having attached themselves to a warm-blooded host, they feed to engorgement in about six days. During this time the original bulk is increased many fold, reaching about the size of a head of a pin. The color, which depends on the character of the food taken, blood or serum, varies from light pink to dark brown. Having fed to surfeitment, the tick drops off and lies dormant for about four weeks prior to moulting. Here again the time varies, being as short as two weeks and as long as two months. Unless the larvæ secure food within two or three weeks after hatching they die.

After the larval skin is cast, the nymph, having four pairs of legs and spiracular orifices but no genital aperture, emerges. It is about 1.5 mm. in length and is at first slightly yellow in color, but after feeding becomes brownish black. Again it awaits a host, and having secured one feeds from four to eight days, becoming greatly enlarged—4 by 2 mm.—and eventually dropping off as in the previous stage of its development. It does not immediately reenter the dormant state, but may be active for a period varying from two to four weeks. This is apparently influenced by the atmospheric tem-

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<sup>1</sup>See Braun (M.), *The Animal Parasites of Man* Wm. Wood & Co., N. Y., 361.

perature. Eventually, however, it becomes quiescent and lies dormant for about a month, while the metamorphosis into the adult is being completed. When this is completed a second moult takes place and it emerges from the snowy white shell a mature tick, with genital orifices and the secondary sexual characteristics typical of the male or female. The adults now attach themselves to a warm-blooded host, and after a time copulation, fertilization, and oviposition take place, and the cycle is recommenced. It is believed that the tick produces but one brood a year. It may be noted also that Cooley (15) quotes W. V. King, of the Montana Agricultural College, as suggesting the hypothesis that the life cycle of this tick (*D. andersoni*) is two years. Additional experimental evidence seems needful to prove this.

#### MAMMALIAN HOSTS OF THE *D. ANDERSONI*.

It is, of course, important that we know what animals act as the hosts for these ticks. This has not only a direct bearing on tick control, but it may also lead us to the discovery of the animal which acts as the intermediary host for the virus, provided, of course, that such is necessary for the perpetuation of the disease. Data has therefore been collected bearing on this important aspect of the question.

*Animals on which the D. Andersoni has been found, their susceptibility to Rocky Mountain spotted fever, and the stage of development of the tick.*

Animal.	Susceptible.	Adult.	Nymph.	Larvæ.
Mule deer ( <i>Odocoileus hemionus</i> ).....	?	+	+	
Elk ( <i>Cervus canadensis</i> ).....	?	+		
Mountain goat ( <i>Oreamnos montanus</i> ).....	?	+	+	
Mountain sheep ( <i>Ovis canadensis</i> ).....	?	+		
Pine squirrel ( <i>Sciurus hudsonicus richardsoni</i> ).....	?		+	+
Yellow-bellied chipmunk ( <i>Eutamias luteiventris</i> ).....	+		+	+
White-bellied chipmunk ( <i>Eutamias quadrivittatus umbrinus</i> ).....	+		+	
Columbian ground squirrel ( <i>Citellus columbianus</i> ).....	+		+	+
Side-striped ground or rock squirrel ( <i>Callospermophilus lateralis cinerascens</i> ).....	+		+	+
Woodchuck ( <i>Marmota flaviventris</i> ).....	+	+	+	+
White-footed mouse ( <i>Peromyscus maniculatus artemisioe</i> ).....	0		+	
Wood rat ( <i>Neotoma cinerea</i> ).....	+		+	
Meadow mouse ( <i>Microtus modestus</i> ).....	0		+	
Porcupine ( <i>Erethizon epixanthum</i> ).....	?	+		
Rock cony or rabbit ( <i>Ochotona princeps</i> ).....	?	+	+	+
Snowshoe rabbit ( <i>Lepus bairdi</i> ).....	?	+	+	
Cottontail rabbit ( <i>Sylvilagus nuttali</i> ).....	+		+	
Coyote ( <i>Canis lestes</i> ).....	0	+		
Badger ( <i>Taxidea taxus</i> ).....	0	+		
Weasel ( <i>Putorius arizonensis</i> ).....	+	+		
Black bear ( <i>Ursus americanus</i> ).....	?	+		
Marten ( <i>Mustela c. origenes</i> ).....	?	+		
Dog ( <i>Canis familiaris</i> ).....	?	+		
Cow ( <i>Bos taurus</i> ).....	0	+		
Horse ( <i>Equus caballus</i> ).....	+	+		
Sheep ( <i>Ovis aries</i> ).....	0	+		
Swine ( <i>Sus scrofa</i> ).....	0	+		

In studying this aspect of the question Ricketts endeavored to determine the following points with regard to the ground squirrel, the ground hog, the rock squirrel, the chipmunks, and the mountain or wood rat:

1. Is the animal susceptible to the disease by inoculation?
2. Is the animal susceptible to the disease through tick bites?
3. Can the "tick cycle" be completed on the animal (i. e., receive the disease through ticks and subsequently infect another tick)?
4. Has the animal the disease in nature?

The results of his experiments may thus be tabulated:

*Susceptibility to Rocky Mountain spotted fever.*

Species.	Inoculation.	By bites.	Tick cycle.
Ground squirrel.....	+	+	+
Ground hog.....	+	+	+
Rock squirrel.....	+	+	+
Chipmunks.....	+	+	?
Mountain rat.....	+	?	

MAMMALIAN HOSTS FOR THE DISEASE.

The question of the occurrence of the disease among mammals in nature has not yet been solved, although considerable work has been and is being done upon it. It is an enormous problem and involves the examination of great numbers of live wild animals, the determination of their immunity to spotted fever and the inoculation of their blood into laboratory animals to find out if they (the wild animals) have the disease in acute form. These points must be settled if we would discover the animal which perpetuates the disease.

During the summer of 1912, shortly before his heroic death, McClintic discovered an infected tick on the body of a Rocky Mountain goat (*Oreamnos montanus*) and it may be that the direction of the search for the mammalian host has been pointed out thereby. Certain it is that goats and spotted fever abound on the western side of the valley, while on the eastern side where there is no fever there are no goats. Also those valleys on the western side of the main valley, which have no goats, also have no fever. Furthermore it is stated that in those small valleys in which formerly large numbers of Angora goats (*Capra angorensis*) were kept, there was much fever, but that since the removal of these animals the disease has disappeared. These facts appear significant and worthy of investigation.

THE VIRUS.

With regard to the virus itself, even less is known. Wilson and Chowning (73) described certain ovoid intracorpuseular bodies in both fresh and stained blood taken from persons suffering with spotted fever. Anderson (1, 2, 3) agreed with them that this organism, which they named "piroplasma hominis," was "very probably the cause of spotted (tick) fever." Ashburn (5) and Stiles (65-67) failed to confirm this view and the latter stated that "indications are not lacking that at least some of the stages of the supposed piroplasma hominis consist in reality of vacuoles, blood platelets, blood dust, artifacts and tertian malaria parasites." Maxey, Simon, and Cole found no piroplasms in the blood of cases in Idaho, and neither Ricketts nor Kieffer secured evidence which convinced them of the existence of the parasite of Wilson and Chowning. Francis was unable to find the organisms and Craig expressed the belief that the supposed piroplasms were merely degenerated erythrocytes.

Ricketts (54) described a pleomorphic bacterium which he believed might bear a casual relation to the disease. The form which he most commonly found was that of "two somewhat lanceolate chro-

matim-staining bodies, separated by a small amount of eosin-staining substance." These bodies were found in the blood of men, animals, and ticks infected with the disease, and seemed to stain best with Giemsa's stain. The eggs of infected ticks from both Montana and Idaho were found to contain large numbers of minute bipolar-staining bacilli, apparently in various developmental stages. These organisms are found in large numbers in the salivary glands, alimentary sac and ovaries of infected females, but they have not been found in the viscera of noninfected male and female ticks. This bacillus has not been grown on artificial media. Ricketts suggested for it the name "the bacillus of Rocky Mountain spotted fever." He found that it does not agglutinate with low dilutions of immune human serum, but agglutinates distinctly in dilutions of 1 to 10, 1 to 20, and 1 to 40. It does not agglutinate with the higher dilutions. Normal human serum, on the contrary, caused clumping in a dilution of 1 to 1, a very slight agglutination in 1 to 10, and none at all in the higher dilutions. In immune guinea pig serum complete agglutination was present in dilutions up to 1 to 160. Normal guinea pig serum produced practically no agglutination at all. Until further proof is brought forward the causal rôle of Ricketts's bacillus must be considered as unproven, although there are many facts which strongly suggest it as the infecting agent.

Whatever may be the cause of Rocky Mountain spotted fever, however, several facts regarding it have been clearly established. It is nonfiltrable; its infectiousness is largely destroyed by grinding it in a ball mill. At 50° C. the infectiousness of the virus is destroyed in 25 or 30 minutes. Infected blood kept in the ice compartment of a refrigerator loses its infectiousness after 15 or 16 days. The pathogenicity of the virus is lost between 24 and 48 hours after complete desiccation. It may be kept alive by passage through guinea pigs, monkeys, rabbits, and ground squirrels (*Citellus columbianus*). The virus is present in the body fluids generally. It produces a rather high degree of immunity.

Whether the organism of Rocky Mountain spotted fever be a protozoon or a bacterium, the fact that it is transmitted to man by the bite of the tick suggests the necessity of some host mammal for the perpetuation of the disease. It is true that in malaria, the protozoon disease type, the hemaneba has but two life cycles, but it is apparent that the opportunities for biting man which the short-seasoned tick possesses are infinitely less than those of the Anopheles. Neither is the disease analogous in its etiology to yellow fever nor to the tick fever of Africa, because both the *Stegomyia calopus* and the *Ornithodoros moubata* are essentially domestic in their habits, whereas the *Dermacentor andersoni* comes in contact with man only accidentally. Also the feeding habits of this species would preclude man from being anything but an accidental host. Hereditary transmission to the eggs of infected females explains how the disease may be kept alive from one spring to the next, but would not account for the perpetuation of the disease, since not more than 50 per cent of the females transmit the disease to their young. At this ratio, when it is considered that on account of the many accidents of nature, only a small percentage reach maturity and only a small number of these become fertilized, it would be a matter of a short time only until the disease became extinct from natural causes.

The domestic and wild animals remain to be considered as possible hosts. This has already been discussed with regard to the wild animals and among them the search has been narrowed down to a few small mammals. Among the domestic animals, the horse has a relative resistance to the disease, while the ox, sheep, and the fowl have a demonstrated resistance. Cats and dogs may possibly play a part in keeping the virus alive, but it is extremely improbable. The larger wild mammals such as deer, elk, bear, etc., wander over wide stretches, certainly into districts where spotted fever does not prevail and are never in continuous close proximity to human dwellings. For the present they may be eliminated from the problem. From the list of larger wild mammals the mountain goat should be excepted. Its range is pretty well confined to the western side of the valley and the Clearwater country beyond. As has been said before, this species should certainly be taken into account.

The white-footed mouse, meadow mouse, coyote, and badger are apparently not susceptible to the disease by inoculation, and since rabbits are infected with some difficulty the rock cony, snowshoe rabbit, and cotton-tail rabbit may be dropped from consideration. Of the animals which remain, the ground squirrel, the ground hog, the rock squirrel, the chipmunk, the mountain rat, and the weazel seem to be the most important. On account of the prevalence of the ground squirrel (*Citellus columbianus*) in the infected zone this species has been regarded with the greatest suspicion, although it is not impossible that several other species may also act as hosts for the virus. The small mammals mentioned certainly enter the problem as sources of food supply for the tick.

#### PROPHYLACTIC AND ERADICATIVE MEASURES.

We are dealing then with a disease whose cause and intermediary host are unknown, but whose disseminating agent we know and can attack. For the present the tick must be the focal point of all prophylactic and eradivative measures. Inasmuch as domestic stock furnish a convenient supply of food for the tick during its various developmental stages, and that the female tick is fertilized during feeding, the killing of ticks on cattle, horses, and sheep is of great importance. This is accomplished by dipping the tick infested animal in crude oil or some of the well-recognized arachnicides, such as cresylic acid, the arsenic salts, or extract of tobacco. This should be done at frequent intervals from March 1 to July 15 and should include all the animals in the infected zone. If for any reason it is not desired to dip any particular animal the ticks may be picked off every four or five days and destroyed.

The clearing and burning of land is a useful measure. This kills the tick directly and on account of the exposure to the bright sunlight prevents the hatching of the eggs. The feeding of cattle in tick-free lots, if done universally, would prevent any increase in the number of ticks. The alternation of pasture has been found of service in combating Texas tick fever and might be of use in the eradication of Rocky Mountain tick fever.

The slaughter of the small mammalian hosts has long been considered a logical measure. This applies particularly to the ground squirrels, which are not only a perineal source of food and habita-

tion for the larval and nymphal ticks, but which may possibly prove to be the intermediary host for the virus. The methods to be used in the destruction of these pests were fully described in a paper presented to the association at the 1910 annual meeting.<sup>1</sup>

Personal prophylaxis is, of course, very important and includes the wearing of tick-proof clothing by all persons entering the infected zone during the season of tick prevalence and the careful daily search of the body for ticks which may have attached themselves and have escaped notice. Ticks should be removed as soon as discovered. In doing this the tick should be given a gentle pull, lest the head be torn off and left in the skin to make a very annoying infection nidus. Another way to remove the tick is to grease it. This closes its respiratory spiracles and causes it to loosen its hold and drop off. When attached very firmly and for some time they may be pried off by a needle thrust into the skin immediately beneath the tick's head. After the removal of the tick the wound should be cauterized with a toothpick dipped in 95 per cent carbolic acid. If there is any suspicion that the tick was received in the zone of infection the bitten person should be given a protective dose of Ricketts's serum.

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# UNITED STATES.

## MUNICIPAL ORDINANCES, RULES, AND REGULATIONS PERTAINING TO PUBLIC HYGIENE.

[Adopted since July 1, 1911.]

### EAST PROVIDENCE (TOWN), R. I.

#### SUBSOIL DRAINS AND DRAINAGE PIPES.

SEC. 7. Every occupied building must, when required by the town council, be provided with an adequate subsoil drain, and the cellar walls and floors must be made impervious to moisture.

Pipes that must be left open to drain cellars, areas, yards, or gardens, must be connected with suitable catch basins, the bottom of which shall not be less than 2½ feet below the bottom of the outlet pipe, the diameter not less than 3 feet, and a form proper for the purpose.

[From chap. 4 of an ordinance adopted Aug. 2, 1911.]

### ELYRIA, OHIO.

#### MILK—PRODUCTION, CARE, AND SALE.

SEC. 1. No person shall bring into the city of Elyria for sale or shall sell or offer for sale any milk or cream without a permit from the board of health.

SEC. 2. No person shall bring into the city of Elyria for sale, or shall sell or offer for sale, any milk which has been obtained from any milk dealer, dairyman, or other person not having a permit issued by the board of health.

SEC. 3. A fee of 50 cents shall be charged for each permit and the same shall be credited to the sanitary fund.

SEC. 4. Permits shall be renewed annually in January. The applicant must state his name, residence, post-office address, and location of his business place or places.

SEC. 5. The applicant must state the number of cows from which milk is obtained for sale, and the number of quarts (estimated) sold daily.

SEC. 6. If the applicant buys part or all of his milk supply, the names and addresses of all persons from whom he obtains milk or cream, and the quantity (estimated) shall be stated.

SEC. 7. If the applicant be a shipper of milk or cream into the city, he shall, in addition to the above, state the route of his shipments.

SEC. 8. Any dairyman, milk dealer, or other person, upon application to the health office for a permit to sell or deliver milk, shall file a sworn statement giving his name and address, the number of cows he owns or has charge of, the average amount of milk (estimated) which he sells each day, the names, addresses, and license numbers of all persons from whom he buys milk, the average amount of milk (estimated) which he buys from them each day.

SEC. 9. The board will not issue any permit unless it is satisfied after inspection with the cleanly and sanitary conditions of the stables, cows, wagons, store or place of business of the applicant therefor, and with all the utensils used by him from which his milk or cream is obtained; and that the food given the cows is pure and wholesome, and that all persons engaged in the care and handling of the milk are free from any contagious diseases and that said persons use due cleanliness in their work.

SEC. 10. All permits must be signed by the applicant, and when received by the food inspector shall be placed on file and the name of such applicant shall be entered in a book of registration kept for such purpose. As soon as possible within 60 days after an application is received at the health office for a permit to sell milk the sanitary police or food inspector shall visit the dairy or place of business of such applicant and make such observation and gather such information as to enable the board to satisfy themselves of the sanitary condition of his dairy.

Should the applicant live at such distance from the city of Elyria as to make it impracticable for the food inspector to visit such dairy premises, such applicant shall furnish evidence to the board of the sanitary condition of his dairy.

SEC. 11. If after issuing a permit to sell milk and cream the board of health shall become satisfied that the provisions of the sanitary code are being violated, it will at once revoke the permit issued to such person or persons and no new permit issued until all insanitary conditions have been rectified and all other provisions of the sanitary code are complied with.

Anyone doing business under a permit from the board of health who shall change the location of such business without notifying the health office of such change shall have such permit revoked at the option of the health board or food inspector.

#### *Milk tickets.*

SEC. 12. If dairymen or other persons offering milk for sale use tickets as representations of value, these tickets must be in coupon form and must be destroyed after once using.

#### *The stable and surroundings.*

SEC. 13. The surroundings to the stable must be kept in a sanitary condition. Cows must not be allowed to stand in manure and filth.

SEC. 13A. All parts of stable except floors and windows must be painted in some light color, or whitewashed at least twice a year. Stables must be kept free from dirt, dust, cobwebs, and odor. Manure and urine must be removed from stable at least once daily, and, if not taken to field daily, must be removed at least 30 feet from stable and placed where cows can not get into it.

Manure must not be thrown out through stable windows. No other animals or fowls will be allowed in the cow stables. Floors must not be laid less than 1 foot higher than outside surface level, so that good drainage can be procured. Floors must be constructed of asphalt, concrete, brick, with surface flushed with cement, or of wood, water tight. They must be kept in good repair at all times and also constructed with a gutter not less than 12 inches wide and 6 inches deep; a 4-foot walk back of cows and not less than a 20-inch manger in front.

Ceiling must be dust tight and kept free from cobwebs.

#### *Light.*

At least 3 square feet of unobstructed window glass must be provided per cow and equally distributed; at least 500 cubic feet of space must be provided per cow; windows must be left partially open if no other method of ventilation is provided for.

Stable yard must be well drained and kept clean.

#### *Cows.*

SEC. 14. Cows must be kept clean. Manure, litter, etc., must not be allowed to become caked and dried on them; they must not be allowed to stand in nor wade through filth and manure.

The bedding must be kept sweet and clean at all times and of sufficient quantity to protect the animals from filth.

#### *Feed and water.*

SEC. 15. Cows must be fed on clean dry feed, neither decayed, mouldy, dusty, distillery waste nor starch waste. If malt is fed it must not be fed when sour.

Pure running spring water or ordinary well water, free from contamination, pumped into clean tanks must be provided.

#### *Milkers.*

SEC. 16. The milkers must thoroughly wash and wipe their hands and the cows' udders before they begin milking. They must not use pails, cans, strainers, etc., unless they have been thoroughly washed in hot water and soap, or hot water and soda and afterwards sterilized with boiling water or steam. Care must be taken that the seams of the vessels are thoroughly cleaned with a brush. They must refrain from milk or handling milk in any way when in themselves or their families there is even a suspicion of any contagious or infectious disease, such as smallpox, scarlet fever, diphtheria, typhoid, tuberculosis, or the like.

*Handling the milk.*

SEC. 17. Immediately after milking the milk shall be removed from the stable into a milk room, screened from flies and other insects, aerated and cooled to at least 60° temperature, and put into perfectly clean bottles and cans. Dairymen who use both bottles and cans in delivering milk shall not fill bottles while on their delivery route.

SEC. 17a. The milk house or milk room must not be attached by doorway to any other building, and must be at least 25 feet from any cesspool or vault. Must be provided with a tight floor, either concrete or wood, laid so as to provide drainage. It must be kept clean at all times and free from any odor.

*Care of cans and bottles.*

SEC. 18. All cans or bottles used in the distribution of milk must be thoroughly cleaned either by hot water and soap or hot water and soda or other alkalies, rinsed and sterilized by boiling water or steam before they are again used as receptacles for milk.

Extreme care must be exercised in cleaning the faucets to cans by use of a brush. Milk cans must be washed and cleaned immediately after the milk or cream is emptied therefrom, and in no case shall the washing be later than 24 hours after the receipt of can.

No person shall use a milk bottle for other than milk purposes.

SEC. 19. No person shall bring into the city for sale, or shall sell or offer for sale, any milk—

- (a) Containing less than 12 per cent of milk solids.
  - (b) Containing more than 88 per cent of water or fluids.
  - (c) Containing less than 3 per cent of milk fats.
  - (d) Having a specific gravity of less than 1.029.
  - (e) Containing any dirt, foreign matter, or sediment.
  - (f) Containing any boracic or salicylic acid, formalin, or other foreign chemicals.
  - (g) Containing any pathogenic bacteria.
  - (h) Containing bacteria of any kind more than 500,000 per cubic centimeter.
  - (i) Drawn from any cow having a communicable disease or showing clinical symptoms of tuberculosis, or from a herd which contains any diseased cattle, or are afflicted with or have been exposed to any communicable disease.
  - (j) Drawn from any cow within 15 days before and 12 days after parturition.
  - (k) Drawn from any cow which has been fed on garbage, refuse, swill, moist distillery waste, or other improper food.
  - (l) Having a temperature or which has been kept at a temperature higher than 55° F.
  - (m) Which has existed or has been kept under conditions contrary to the provisions of this code.
  - (n) No milk shall be kept, sold, or offered for sale drawn from cows suffering with sore and inflamed udders and teats, or from cows diseased.
- Provided, that the subdivisions (a), (b), (c), and (d) of this section shall not apply to milk sold under the name of skimmed milk.

*Skimmed milk.*

SEC. 20. (a) No person shall bring into the city of Elyria for sale or sell or offer for sale milk from which the cream has been removed, either in part or in whole, unless sold as skimmed milk and unless plainly marked "Skimmed milk."

(b) No person shall bring into the city for sale or sell or offer for sale any so-called skimmed milk containing less than 9.3 per cent of milk solids.

*Milk delivery wagons.*

SEC. 21. (a) No one shall use any vehicle for the delivery of milk in the city of Elyria which has not painted thereon in legible Roman letters and on both sides of the vehicle in a conspicuous place the name and location of his dairy and the number of his permit.

(b) Every person using in the sale or distribution of milk a delivery wagon or other vehicle shall keep the same at all times in a cleanly condition and free from any substance to contaminate or injure the purity of the milk, and from May 1 to October 1 shall have and keep over such delivery wagon or other vehicle a covering of canvas or other material so arranged as to thoroughly protect the contents thereof from the rays and heat of the sun.

*Original container.*

SEC. 22. No person or milk dealer shall sell, deliver, sell or offer to sell, or keep for sale in stores milk or cream in quantities less than 1 gallon unless delivered and kept in the original package or container. (Exception—Original packages of not greater capacity than 1 quart may be broken for sale if the unsold portion is kept in the original package, properly closed.) The compartment where milk or cream is kept shall be separated by an impervious water and odor proof partition from all other compartments of any ice box or refrigerator. Neither milk nor cream shall be kept in the same compartment with any other foodstuffs except butter and cheese.

*Contagious diseases.*

SEC. 23. (a) Should scarlet fever, smallpox, diphtheria, typhoid fever, tuberculosis or other dangerous or infectious disease occur in the family of any dairyman or among any of his employees, or in any house in which milk is kept for sale, or in the family or among the employees of any person who ships milk into the city of Elyria for sale, such dairyman, such venders, or shippers of milk shall immediately notify the health officer of the facts of the case, and the health officer shall at once investigate and order the sale of such milk stopped, or sold under such regulations as he thinks proper.

(b) Should dairymen, venders, or shippers of milk fail to notify the health officer when contagious diseases exist in their families or in the families of their employees, or who, after such information is given the health officer, fail to obey his directions, the milk and dairy inspector shall seize and destroy all milk sent into the city by such persons, and he shall, when acting in good faith, be held harmless in damages therefor, in any suit or demands made.

(c) In delivering milk to families in which there exists any of the above named contagious or infectious diseases the dairyman shall not enter, neither shall he permit any of his milk bottles or vessels to be taken into such houses, but shall pour such milk as each family wishes into vessels furnished by such family, or if bottles are left must remain until quarantine has been raised, then sterilized by order of sanitary policeman.

*Milk inspectors.*

SEC. 24. The milk or dairy inspector, the health officer, or any person authorized by the board of health, may examine all dairy herds, utensils for handling milk, of all dairymen or other persons engaged in selling or shipping for sale milk or cream to the city of Elyria. These inspectors shall have power to open any can, vessel, or package containing milk or cream, whether sealed (locked) or otherwise, and take samples of the milk or cream for testing or analysis; and if, upon inspection, the milk or cream is found to be filthy, or the can or other containers are in an unclean condition, the said inspector may then and there condemn the milk or cream as deemed by him to be filthy, and pour the contents of such bottles, vessels, or packages upon the ground forthwith, and he shall, if done in good faith, be held harmless in damages therefor, in any suit or demand made.

*Cream.*

SEC. 25. No person shall bring into the city of Elyria for sale or shall sell or offer for sale any cream unless such cream is produced from milk which must conform to all rules and regulations of this code, relating to milk, nor unless such cream be kept at or below 50° F., free from foreign substances, and shall not contain more than 1,000,000 bacteria per cubic centimeter, and shall not contain less than 16 per cent of milk fat.

*Rules governing the inspection of milk by the dairy inspectors in connection with score card.*

SEC. 26. Rule 1. The dairies of all persons shipping milk for sale in Elyria will be inspected and rated according to the following provisions:

(a) *Cows*.—Condition and healthfulness: Perfect score, 10. (Two points will be deducted if cows are in poor flesh, and 8 points if not tuberculosis tested.)

Cleanliness: Perfect score, 5. (All cows clean, 5; good, 4; fair, 3; medium, 2; poor, 1; bad, 0.)

(b) *Stables*.—Construction of floors: Perfect score, 5. (If the floor is of cement or stone flag in good repair, 5; brick or matched boards in good repair, 4; ordinary wooden floor in good repair, 3; one-half wood and one-half cement, 3; half wood, cement, or other material and half dirt, 2; any material in poor repair, 1; if no floor, allow 0.)

Cleanliness: Perfect score, 5. (If stables are perfectly clean, including windows, walls, and ceiling, 5; deduction will be in proportion to dirt, cobwebs, etc.)

Light: Perfect score, 5. (For 4 square feet per cow, 5 points will be given; 3 square feet per cow, 4; 2 square feet per cow, 3; 1 square foot per cow, 2; 6 square inches per cow, 1; less than 6 square inches per cow, 0.)

Ventilation: Perfect score, 4. (If ventilation is good, 4 points will be given; deductions will be made in proportion to lack of ventilation; if all windows are closed and no attempt at ventilation is made, 0 will be allowed.)

Cubic space per cow: Perfect score, 3. (If 500 cubic feet per cow, 3 points will be allowed; less than 500 and over 400 cubic feet per cow, 2; less than 400 and over 300 cubic feet per cow, 1; less than 300 cubic feet per cow, 0 will be allowed.)

Removal of manure: Perfect score, 2. (If manure is hauled to the fields daily, 2 points will be allowed; removed 30 feet from stable, 1; otherwise, 0.)

Stable yard: Perfect score, 1. (If stable yard is in good condition and well drained, 1 point will be allowed; otherwise, 0.)

(c) *Water supply*.—For cows: Perfect score, 5. (If cows are supplied with pure running water, 5 points will be allowed; running well water from windmill or otherwise, 4; ordinary well water, 3; pond or other muddy water, 0.)

For milk house: Perfect score, 5. (If milk house is supplied with pure, clean running water, 5 points will be allowed; pure well water, 3; otherwise, 0.)

(d) *Milk house*.—Construction: Perfect score, 5. (If the floor is of cement or tight boards well drained, if the walls and ceiling are sound, and the milk house is well lighted and ventilated and not attached by doorway to any other building, 5 points will be given; if the milk house is in a barn or house, 2 points will be deducted, and deductions will be made in proportion to deficiency in construction, light, and repair. If there is no milk house, 0 will be allowed.)

Equipment: Perfect score, 5. (If hot water is installed for cleaning utensils, 1 point will be given; proper pails used for no other purpose, 1; proper strainers, 1; aerator, 1; soda or washing powder for utensils, 1; 1 point will be deducted for absence of any.)

Cleanliness of interior: Perfect score, 5. (If the interior is absolutely clean, including windows, 5 points will be allowed; good condition, 4; medium, 3; fair, 2; poor, 1; bad, 0.)

Care and cleanliness of utensils: Perfect score, 5. (If all utensils are thoroughly clean and kept on suitable racks, 5 points will be allowed; 2 points will be deducted for absence of rack; deductions will be made for rusty utensils or careless washing. The lighting and ventilation of the milk house, together with its location in regard to other buildings, will be taken into consideration.)

(e) *Milkers and milking*.—Health of attendants: Perfect score, 5. (If attendants are all in a healthy condition, 5 points will be allowed; if any of the attendants are sick or a contagious disease exists in the family, 0 will be allowed.)

Cleanliness of milking: Perfect score, 10. (If milking is done in special suits for milking, with clean, dry hands and with special attention to cleanliness of udders and teats before milking, 10 points will be given; all of the above except special suits, 7; in addition 4 points will be deducted for unclean teats or udder and 3 points for dirty hands; if wet milking will be done, 0 will be allowed.)

(f) *Handling the milk*.—Prompt cooling: Perfect score, 5. (If milk is poured from pail into cool receptacles as soon as milked, 5 points will be given; if poured into can and can is put into cold water as soon as filled, 2; otherwise, 0.)

Efficient cooling: Perfect score, 5. (If milk reaches a temperature of 60° before being shipped, 5 points will be given; a temperature of 65°, 3; a temperature of 70°, 1; above 70°, 0 will be allowed.)

Storing at low temperature: Perfect score, 5. (If milk is stored at a temperature of 60°, 5 points will be given; a temperature of 70°, 1; above 70°, 0 will be allowed.)

Rule 2. All dairies will be scored by the inspector upon a card in the following form:

Owner or lessee of farm	_____.	
Town	_____.	State _____.
Number of cows	_____.	
Quarts of milk produced daily	_____.	
Is product sold at wholesale or retail?	_____.	
If shipped to dealer give name and address	_____.	
Permit No.	_____.	Date of inspection _____.
		191—
Cows:		Perfect score.
Condition (2), health (8)	.....	10
Cleanliness	.....	5
Stables:		
Construction of floors	.....	5
Cleanliness	.....	5
Light	.....	5
Ventilation	.....	4
Cubic space per cow	.....	3
Removal of manure (2), cleanliness and drainage, stable yard (1)	.....	3

	Perfect score.
Water supply:	
For cows.....	5
For milk house.....	5
Milk house:	
Construction.....	5
Equipment.....	5
Cleanliness.....	5
Care and cleanliness of utensils.....	5
Is house detached? _____ Lighted? _____ Ventilated? _____	
Milkers and milking:	
Health of attendants.....	5
Cleanliness of milking.....	10
Handling the milk:	
Prompt cooling.....	5
Efficient cooling.....	5
Storing at low temperature.....	5
Total score.....	100
Sanitary conditions are excellent _____ Good _____ Medium _____ Poor _____	
Suggestions by inspector _____	

Milk or cream from dairies falling below 45 in the rating as indicated above will be excluded from sale in Elyria during 1911-12; milk or cream from dairies falling below 50 will be excluded from sale in Elyria during 1913, and thereafter.

*Penalty.*

SEC. 27. Whoever violates any provision of the above resolution, or obstructs or interferes with the execution thereof, or willfully or illegally omits to obey any provisions of said resolution, shall be fined not to exceed \$100, or imprisoned for not to exceed 90 days, or both; but no person shall be imprisoned hereunder for the first offense, and the prosecution shall always be as and for a first offense, unless the affidavit upon which the prosecution is instituted contains the allegation that the offense is a second or repeated offense.

SEC. 28. This resolution to be in force and effect from and after October 1, 1911. [Ordinance adopted July 28, 1911.]

**YONKERS, N. Y.**

**PRIVIES, CESSPOOLS, DRAINS, AND SEWERS.**

SEC. 74. It shall be the duty of the owner of every building now or hereafter erected upon any land adjacent or accessible to a public sewer, to cause said building to be properly connected with such sewer, and no house hereafter erected shall be inhabited, occupied, or used by any person before the same shall be connected with a public sewer, if practicable.

SEC. 75. Wherever it is practicable to connect any premises in the city with a public sewer, it shall not be lawful for any person to construct any vault, privy, water-closet, sink, drain, school sink, or cesspool thereon, for receiving or discharging any excrement, sewage, or slops, and the owner of such premises shall not suffer or permit any privy, vault, school sink, or cesspool to remain thereon after notice from the health officer to discontinue the use thereof, but shall empty and fill in the same in the manner prescribed by the health officer.

SEC. 76. No privy, vault, or cesspool shall be allowed to remain on any premises or shall be built in the city of Yonkers unless when unavoidable and in accordance with the terms of a permit issued by the health bureau. The sides and bottom of every privy, vault, cesspool, or school sink in the city of Yonkers must be impermeable, and secure against any saturation of the walls or ground above the same.

SEC. 77. Where no public sewer is accessible in outlying districts, and where water-tight cesspools are not considered by the health officer to be an immediate necessity, the system of drainage of residences containing one or more acres of ground shall consist of two cesspools and a drain to be constructed in the following manner: The first cesspool to be divided by a partition and to connect to second by a tight pipe; the second cesspool to be sufficiently large to contain all overflow from the first for two days, and to syphon into system of blind drain sufficiently large to absorb sewage; the drain to

be at least 1 foot below the surface of the ground. Every part of the whole system to be at least 75 feet from any brook or stream, and from land belonging to other parties.

SEC. 78. No connection by overflow or otherwise shall be made, constructed, or continued with or from any refrigerator, tank or cistern to or with any cesspool, privy, vault, water-closet, sewer or house drain, except only such as shall first discharge freely into the open atmosphere.

SEC. 79. No person shall draw off, or allow to run off into or upon any ground, street, or place in the city of Yonkers the contents, or any part thereof, of any vault, privy, cistern, cesspool, or sink; nor shall any owner, tenant or occupant of any building to which any vault, sink, privy, or cesspool shall appertain or be attached, permit the contents, or any part thereof to flow therefrom, or to rise within 2 feet of any part of the surface of the adjoining ground, or permit said contents to become offensive.

(a) Every tenement, boarding or lodging house shall be provided with the best or most approved water-closet, and in no case shall there be less than one water-closet for every 15 occupants in a boarding or lodging house, and not less than 1 for every 2 families for dwelling houses.

SEC. 80. (b) Every tenement and boarding house shall have city or other water furnished in sufficient quantity at one or more places on each floor occupied or intended to be occupied by one or more families.

SEC. 80. Every person who shall be the owner, lessee, keeper or manager of any tenement house, boarding house, lodging house, hotel or manufactory, shall provide, or cause to be provided, for the accommodation thereof and for the use of the tenants, lodgers, boarders and employees thereat, adequate privies or water-closets, and the same shall be so well ventilated and shall at all times be kept in such a cleanly and wholesome condition as not to be offensive, or be dangerous or detrimental to life or health. And no offensive smell or gases from or through any outlet or sewer, or through any such privy or water-closet shall be allowed by any person aforesaid to pass into such house or any part thereof, or into any other house or building.

SEC. 81. No person shall throw into or deposit in any vault, sink, privy or cesspool, any offal, ashes, meat, fish, garbage, or other substances, except that of which any such place is the appropriate receptacle.

[Part of ordinance adopted Dec. 16, 1911.]

PLAGUE.

RECORD OF PLAGUE INFECTION.

Places.	Date of last case of human plague.	Date of last case of rat plague.	Date of last case of squirrel plague.	Total number of rodents found infected since May, 1907.
<b>California:</b>				
Cities—				
San Francisco.....	Jan. 30, 1908.....	Oct. 23, 1908....	None.....	398 rats.
Oakland.....	Aug. 9, 1911.....	Dec. 1, 1908.....	do.....	126 rats.
Berkeley.....	Aug. 27, 1907.....	None.....	do.....	None.
Los Angeles.....	Aug. 11, 1908.....	do.....	Aug. 21, 1908....	1 squirrel.
Counties—				
Alameda (exclusive of Oakland and Berkeley).	Sept. 26, 1909....	Wood rat, Oct. 17, 1909.	Aug. 14, 1912....	252 squirrels and 1 wood rat.
Contra Costa.....	July 21, 1911....	None.....	Aug. 17, 1912....	1,109 squirrels.
Fresno.....	None.....	do.....	Oct. 27, 1911....	1 squirrel.
Merced.....	do.....	do.....	July 13, 1911....	5 squirrels.
Monterey.....	do.....	do.....	Aug. 6, 1911....	6 squirrels.
San Benito.....	June 5, 1910....	do.....	June 8, 1911....	22 squirrels.
San Joaquin.....	Sept. 18, 1911....	do.....	Aug. 26, 1911....	18 squirrels.
San Luis Obispo.....	None.....	do.....	Jan. 29, 1910....	1 squirrel.
Santa Clara.....	Aug. 23, 1910....	do.....	Oct. 5, 1910....	23 squirrels.
Santa Cruz.....	None.....	do.....	May 17, 1910....	3 squirrels.
Stanislaus.....	do.....	do.....	June 2, 1911....	13 squirrels.
<b>Louisiana:</b>				
City—				
New Orleans.....	do.....	July 27, 1912....	None.....	1 rat.
<b>Washington:</b>				
City—				
Seattle.....	Oct. 30, 1907....	Sept. 21, 1911....	do.....	25 rats.

PLAGUE-INFECTED SQUIRRELS, CALIFORNIA.

During the week ended August 17, 1912, positive diagnosis was made of 12 plague-infected ground squirrels found in Alameda County and Contra Costa County, as follows: Alameda County—August 12, 1 squirrel; August 13, 1 squirrel; August 14, 1 squirrel. Contra Costa County—August 7, 1 squirrel; August 12, 1 squirrel; August 13, 3 squirrels; August 14, 1 squirrel; August 15, 1 squirrel; August 17, 2 squirrels.

RATS COLLECTED AND EXAMINED FOR PLAGUE INFECTION.

Places.	Week ended—	Found dead.	Total collected.	Examined.	Found infected.
<b>California:</b>					
Cities—					
Berkeley.....	Aug. 17, 1912	4	1 174	115	.....
Oakland.....	do.....	16	2 616	492	.....
San Francisco.....	do.....	10	3 1,706	1,350	.....
<b>Washington:</b>					
City—					
Seattle.....	do.....		970	892	.....

<sup>1</sup> Identified: *Mus norvegicus*, 129; *Mus musculus*, 45.

<sup>2</sup> Identified: *Mus norvegicus*, 531; *Mus musculus*, 85.

<sup>3</sup> Identified: *Mus norvegicus*, 923; *Mus alexandrinus*, 219; *Mus musculus*, 265; *Mus rattus*, 299.

**SQUIRRELS COLLECTED AND EXAMINED FOR PLAGUE INFECTION,  
CALIFORNIA.**

During the week ended August 17, 1912, there were examined for plague infection 100 squirrels from Alameda County, 449 from Contra Costa County, and 78 from Stanislaus County. Three squirrels from Alameda County and 9 from Contra Costa County were found infected.

**EXAMINATION OF RATS AT NEW ORLEANS, LA.**

Because of the occurrence of plague in Porto Rico and Cuba the Louisiana State Board of Health, the New Orleans City Board of Health, and the United States Public Health Service have been cooperating in the collection and examination of rats in New Orleans to ascertain the possible presence of plague infection among rodents. Surg. J. H. White of the United States Public Health Service is in charge of the work. As previously noted in the Public Health Reports a plague-infected rat was found during the latter part of July on the water front. A statement of the number of rats collected and examined and of the results of the examinations follows:

Cities.	Week ended.	Found dead.	Total collected.	Examined.	Found infected.
New Orleans, La.....	July 24	.....	228	228	.....
Do.....	July 31	.....	303	303	1
Do.....	Aug. 7	.....	482	482	.....
Do.....	Aug. 14	.....	64	64	.....
Do.....	Aug. 21	.....	783	781	.....
Do.....	Aug. 28	.....	1,118	1,118	.....
Total.....	.....	.....	2,978	2,976	1

No plague-infected rat has been found among the rats taken from July 18 to August 28, a period of 41 days.

**CEREBROSPINAL MENINGITIS.**

**CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES  
FOR THE WEEK ENDED AUG. 17, 1912.**

Cities.	Cases.	Deaths.	Cities.	Cases.	Deaths.
Baltimore, Md.....	.....	3	New Orleans, La.....	1	1
Boston, Mass.....	1	1	New York, N. Y.....	3	2
Cleveland, Ohio.....	2	1	Peoria, Ill.....	1	3
Dayton, Ohio.....	4	2	Pittsfield, Mass.....	.....	1
El Paso, Tex.....	1	.....	Richmond, Va.....	.....	1
Jersey City, N. J.....	.....	3	Springfield, Ill.....	.....	1
Nashville, Tenn.....	.....	1	Toledo, Ohio.....	.....	1

**ERYSIPELAS.**

**CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES  
FOR THE WEEK ENDED AUG. 17, 1912.**

Cities.	Cases.	Deaths.	Cities.	Cases.	Deaths.
Boston, Mass.....	.....	1	New York, N. Y.....	3	3
Bridgeport, Conn.....	1	.....	Reading, Pa.....	1	.....
Cincinnati, Ohio.....	.....	1	St. Louis, Mo.....	2	.....
Cleveland, Ohio.....	2	1	San Francisco, Cal.....	1	.....
New Orleans, La.....	.....	1	Schenectady, N. Y.....	.....	1

**PELLAGRA.**

During the week ended August 17, 1912, pellagra was reported by city health authorities as follows: Montgomery, Ala., 1 death; Richmond, Va., 1 death; Wilmington, N. C., 1 case.

**PNEUMONIA.**

**CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES FOR THE WEEK ENDED AUG. 17, 1912.**

Cities.	Cases.	Deaths.	Cities.	Cases.	Deaths.
Baltimore, Md.		8	Newburyport, Mass.		1
Boston, Mass.		10	New York, N. Y.		58
Bridgeport, Conn.		2	North Adams, Mass.		1
Cambridge, Mass.		2	Omaha, Nebr.		1
Chicago, Ill.	5	41	Passaic, N. J.		2
Cleveland, Ohio.	6	2	Peoria, Ill.		1
Dayton, Ohio.		1	Providence, R. I.		3
Elizabeth, N. J.		1	Richmond, Va.		1
El Paso, Tex.		1	San Diego, Cal.	1	1
Evansville, Ind.		2	San Francisco, Cal.	9	
Everett, Mass.		1	Saratoga Springs, N. Y.		1
Fall River, Mass.		1	Schenectady, N. Y.	1	1
Grand Rapids, Mich.	1		South Bethlehem, Pa.	1	
Knoxville, Tenn.		1	Toledo, Ohio.		1
Los Angeles, Cal.		7	Washington, D. C.		3
Lynn, Mass.		2	Wheeling, W. Va.		1
Malden, Mass.		1	Wilmington, Del.		2
Nashville, Tenn.		2	Wilmington, N. C.		1
Newark, N. J.		2	Yonkers, N. Y.		2

**POLIOMYELITIS (INFANTILE PARALYSIS).**

**CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES FOR THE WEEK ENDED AUG. 17, 1912.**

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Baltimore, Md.	2		Los Angeles, Cal.	19	2
Binghamton, N. Y.	1	1	New York, N. Y.	7	2
Bridgeport, Conn.	2		Rockford, Ill.	1	
Camden, N. J.	1		Saginaw, Mich.		1
Chicago, Ill.	13		Schenectady, N. Y.	1	
Cleveland, Ohio.	6	2	Springfield, Ill.	4	
Dayton, Ohio.	5	1	Springfield, Mass.	3	1
Fort Wayne, Ind.	1				

**LOS ANGELES, CAL.**

Surg. Brooks reports that during the week ended August 24 there were notified in Los Angeles 12 cases of poliomyelitis with 2 deaths.

**RABIES.**

One case of rabies with one death was reported by the health officer at Newark, N. J., for the week ended August 17, 1912.

**TETANUS.**

**CASES AND DEATHS REPORTED BY CITY HEALTH AUTHORITIES FOR THE WEEK ENDED AUG. 17, 1912.**

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Baltimore, Md.		3	Orange, N. J.		1
Chicago, Ill.		3	Toledo, Ohio.		1
New Orleans, La.		1	Yonkers, N. Y.		1

## SMALLPOX IN THE UNITED STATES.

## CITY REPORTS.

Cases and Deaths Reported by City Health Authorities for the Week Ended Aug. 17, 1912.

City.	Cases.	Deaths.	City.	Cases.	Deaths.
Carbondale, Pa. ....	10	.....	Niagara Falls, N. Y. ....	1	.....
Chattanooga, Tenn. ....	1	.....	Oklahoma City, Okla. ....	1	.....
Los Angeles, Cal. ....	4	1	Peoria, Ill. ....	2	.....
Milwaukee, Wis. ....	2	.....	San Francisco, Cal. ....	5	.....
New Orleans, La. ....	1	.....	Wilmington, N. C. ....	1	.....

## STATE REPORTS.

This table is compiled from reports made to the Bureau of the United States Public Health Service by the health authorities of certain States, and shows the number of cases of smallpox notified to the authorities in these States.

The following States report monthly: Arizona, California, Colorado, Connecticut, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Mississippi, Montana, New Jersey, New York, North Carolina, North Dakota, Oklahoma, Ohio, Oregon, Pennsylvania, South Dakota, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming.

Florida, Minnesota, and the District of Columbia report by weeks.

## Reports Received During Week Ended Sept. 6, 1912.

Places.	Date.	Cases.	Deaths.	Remarks.
<b>California:</b>				
Counties—				
Butte .....	July 1-31 .....	4	.....	
Calaveras .....	do .....	5	.....	
Colusa .....	do .....	1	.....	
Los Angeles .....	do .....	14	4	
San Francisco .....	do .....	16	.....	
Total for State .....		40	4	
<b>Michigan:</b>				
Counties—				
Allegan .....	June 1-30 .....	12	.....	
Branch .....	do .....	2	.....	
Cass .....	do .....	2	.....	
Eaton .....	do .....	1	.....	
Monroe .....	do .....	9	.....	
Muskegon .....	do .....	2	.....	
Shiawassee .....	do .....	1	.....	
Van Buren .....	do .....	23	.....	
Wayne .....	do .....	8	.....	
Total for State .....		60	.....	
Calhoun .....	July 1-31 .....	4	.....	
Hillsdale .....	do .....	4	.....	
Oakland .....	do .....	1	.....	
Shiawassee .....	do .....	1	.....	
Van Buren .....	do .....	1	.....	
Wayne .....	do .....	2	.....	
Total for State .....		13	.....	
<b>Minnesota:</b>				
Counties—				
Aitkin .....	June 18-July 1 .....	2	.....	
Carlton .....	June 4-10 .....	2	.....	
Crow Wing .....	June 24-July 1 .....	2	.....	
Dakota .....	June 18-24 .....	1	.....	
Dodge .....	May 28-June 1 .....	1	.....	

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received During Week Ended Sept. 6, 1912.

Places.	Date.	Cases.	Deaths.	Remarks.
<b>Minnesota—Continued.</b>				
<b>Counties—Continued.</b>				
Fillmore.....	June 4-10.....	1		
Hennepin.....	June 25-July 1.....	83		
Lac qui Parle.....	June 11-17.....	2		
Lincoln.....	June 25-July 1.....	1		
Mower.....	May 28-June 24.....	15		
Ottertail.....	June 18-24.....	17		
Polk.....	June 11-17.....	1		
Ramsey.....	June 4-July 1.....	134		
Red Lake.....	June 4-10.....	1		
Rice.....	May 28-July 1.....	8		
St. Louis.....	June 4-July 1.....	4		
Todd.....	do.....	1		
Traverse.....	May 28-June 24.....	3		
Washington.....	June 4-10.....	1		
Winona.....	do.....	2		
<b>Total for State.....</b>		<b>282</b>		
Bigstone.....	July 9-15.....	1		
Dakota.....	do.....	1		
Goodhue.....	July 3-15.....	3		
Houston.....	July 2-8.....	2		
Isanti.....	do.....	1		
Lyon.....	do.....	4		
Mower.....	July 16-22.....	2		
Murray.....	July 2-8.....	1		
Nicollet.....	July 23-29.....	1		
Pine.....	July 16-22.....	1		
Pope.....	do.....	1		
Ramsey.....	July 2-29.....	20		
Rice.....	July 2-8.....	6		
St. Louis.....	July 16-29.....	11		
Todd.....	July 2-15.....	1		
Washington.....	do.....	2		
<b>Total for State.....</b>		<b>58</b>		
<b>Grand total.....</b>		<b>453</b>	<b>4</b>	

MORBIDITY AND MORTALITY.

MORBIDITY AND MORTALITY TABLES FOR CERTAIN DISEASES, CITIES OF THE UNITED STATES, FOR WEEK ENDED AUG. 17, 1912.

Cities.	Popula- tion, United States census 1910.	Total deaths from all causes.	Diph- theria.		Measles.		Scarlet fever.		Tubercu- losis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
<i>Cities having over 500,000 inhabitants.</i>												
Baltimore, Md.....	558,485	196	9	1	3		1		57	21	53	3
Boston, Mass.....	670,585	200	16	2	21			49	19	19	2	
Chicago, Ill.....	2,185,283	590	81	13	30	1	92	9	161	56	36	7
Cleveland, Ohio.....	560,663	149	41		8	2	23	2	26	9	4	
New York, N. Y.....	4,766,883	1,362	143	9	129	7	60	8	383	126	167	16
St. Louis, Mo.....	687,029	189	33	2			6		32	15	16	2
<i>Cities having from 300,000 to 500,000 inhabitants.</i>												
Cincinnati, Ohio.....	364,463	93	11		4	1	4		21	11	7	1
Detroit, Mich.....	465,766	162	17	3			8					
Los Angeles, Cal.....	319,198	96	3		2		2		35	7		
Milwaukee, Wis.....	373,857	103	8	2	8		10		11	4	9	1
Newark, N. J.....	347,469	88	10	2	8		6		33	8	6	4
New Orleans, La.....	339,075	121	7				5		48	12	8	2
San Francisco, Cal.....	416,912	125	4	2	2		2		19	17	12	1
Washington, D. C.....	331,069	131	4		4		1		17	12	29	5

## MORBIDITY AND MORTALITY—Continued.

Morbidity and mortality tables for certain diseases, cities of the United States, for week ended Aug. 17, 1912—Continued.

Cities.	Popula- tion, United States census 1910.	Total deaths from all causes.	Diph- theria.		Measles.		Scarlet fever.		Tubercu- losis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
<i>Cities having from 200,000 to 300,000 inhabitants.</i>												
Jersey City, N. J.	267, 779	72		1							3	
Providence, R. I.	224, 326	61	10	1	1	2	6	1		5	6	1
<i>Cities having from 100,000 to 200,000 inhabitants.</i>												
Bridgeport, Conn.	102, 054	31	2	1			7		1	2		
Cambridge, Mass.	104, 839	23	4						9	4	1	
Columbus, Ohio	181, 543	58	1		1		6		14	3	5	1
Dayton, Ohio	116, 577	37	11		1				1	3	4	
Fall River, Mass.	119, 295	29	2		1				6	1		
Grand Rapids, Mich.	112, 571	29	2	1			4	3	3	1	9	1
Lowell, Mass.	106, 294	33	1				6		5	3	4	
Nashville, Tenn.	110, 364	38	3				2		4	2	2	1
Oakland, Cal.	150, 174	31	2				1		6	2	4	
Omaha, Neb.	124, 096	24			1		2		2	1	2	
Richmond, Va.	127, 623	58	2		1		4		3	3	10	1
Toledo, Ohio	168, 497	54	2		4	1	4		4	4	15	1
Worcester, Mass.	145, 986	52	4	1	2		3		8	3	4	1
<i>Cities having from 50,000 to 100,000 inhabitants.</i>												
Altoona, Pa.	52, 127	10					2		2	1	2	
Bayonne, N. J.	55, 545	16	1	1	6	2		1				1
Brockton, Mass.	56, 878	15	3	2	1		1			1	3	
Camden, N. J.	94, 538		2						4		1	
Elizabeth, N. J.	73, 409	25	5		3		3	1	7	2	6	1
Erie, Pa.	66, 525	15	2		2		5	2				
Evansville, Ind.	69, 647	24	2				2			1	1	
Fort Wayne, Ind.	63, 933	18	2							3	2	
Hartford, Conn.	98, 915	35	3	1	6	1		1	5	2	5	
Hoboken, N. J.	70, 324	17	2				1				9	
Johnstown, Pa.	55, 432	21					1			1	5	3
Kansas City, Kans.	82, 331						2		2		1	
Lynn, Mass.	89, 336	18	1		6				3	1		
Manchester, N. H.	70, 063	26	1								7	
New Bedford, Mass.	96, 652	32			1				3		4	
Oklahoma City, Okla.	64, 205	7	1							1	7	
Passaic, N. J.	54, 773	17			1					1	4	
Peoria, Ill.	66, 950	16	1							1		
Reading, Pa.	96, 071	38	5	2	4		1			1	8	1
Saginaw, Mich.	50, 510	10			7					1		
San Antonio, Tex.	96, 614									5		1
Schenectady, N. Y.	72, 826	17	1		1				4	2	6	
South Bend, Ind.	53, 684	15					1			3	1	
Springfield, Ill.	51, 678	21			1				4	1	1	2
Springfield, Mass.	88, 926	21					3		4	1	9	1
Trenton, N. J.	96, 815	41			1	1	2		3	1	3	1
Wilkes-Barre, Pa.	67, 105	11	1				1		4			
Wilmington, Del.	87, 411	36										2
Yonkers, N. Y.	79, 803	21	4	1	1		1		5	1		
<i>Cities having from 25,000 to 50,000 inhabitants.</i>												
Atlantic City, N. J.	46, 150	14				2					2	
Aurora, Ill.	29, 807	9										
Berkeley, Cal.	40, 434	12	2									
Binghamton, N. Y.	48, 443	14	1		1		2		3	2	2	1
Chattanooga, Tenn.	44, 604		1				1		2		3	
Chelsea, Mass.	32, 452	15			1				1	2		
Chicopee, Mass.	25, 401	8	1						1		1	
Danville, Ill.	27, 871	7	1	1						1		
East Orange, N. J.	34, 371		1	1					1		1	
Elmira, N. Y.	37, 176	9	2	1	1				2		1	
El Paso, Tex.	39, 279	19	2	1			2			1	1	1
Everett, Mass.	33, 484	6							2			
Fitchburg, Mass.	37, 826	5							3			
Haverhill, Mass.	44, 115	14	2		7		1		4			
Knoxville, Tenn.	36, 346	13					1					1
La Crosse, Wis.	30, 417	6									2	



**STATISTICAL REPORTS OF MORBIDITY AND MORTALITY, STATES OF THE UNITED STATES (Untabulated).**

**MASSACHUSETTS.**—Week ended July 6, 1912. Population of reporting towns 2,580,537. Total number of deaths from all causes 695, including diphtheria 4, measles 2, scarlet fever 2, tuberculosis 66, typhoid fever 4. Cases reported: Diphtheria 66, measles 380, scarlet fever 43, smallpox 1, tuberculosis 147, typhoid fever 37.

Week ended July 13, 1912. Population of reporting towns 2,593,485. Total number of deaths from all causes 822, including diphtheria 5, measles 12, tuberculosis 67, typhoid fever 3. Cases reported: Diphtheria 56, measles 305, scarlet fever 30, smallpox 5, tuberculosis 148, typhoid fever 39.

Week ended July 20, 1912. Population of reporting towns 2,580,537. Total number of deaths from all causes 684, including diphtheria 2, measles 13, scarlet fever 1, tuberculosis 65, typhoid fever 2. Cases reported: Diphtheria 82, measles 212, scarlet fever 28, smallpox 1, tuberculosis 144, typhoid fever 46.

Week ended July 27, 1912. Population of reporting towns 2,519,148. Total number of deaths from all causes 685, including diphtheria 4, measles 1, tuberculosis 62, typhoid fever 5. Cases reported: Diphtheria 71, measles 125, scarlet fever 45, tuberculosis 124, typhoid fever 40.

**NORTH DAKOTA.**—Month of July, 1912. Population 577,056. Total number of deaths from all causes 351, including measles 1, tuberculosis 2. Cases reported: Diphtheria 2, measles 7, scarlet fever 9, smallpox 21, tuberculosis 6, typhoid fever 5.

# FOREIGN AND INSULAR.

## AUSTRIA-HUNGARY.

### Cholera.

A fatal case of cholera occurred July 20 at Mindszent in Hungary. No further case was reported to August 7 and the locality has been declared free from infection.

### Plague on Vessel at Trieste.

A case of plague occurred July 18 among the crew of the steamship *Amphitrite* at Trieste. The diagnosis was bacteriologically confirmed July 26. The vessel left Mersina, in Turkey in Asia, June 19, touched at many ports, including Port Said and Alexandria, and arrived at Trieste July 4. The presence of plague among rats on the vessel was bacteriologically verified.

## CHINA.

### Hongkong—Plague—Plague-infected Rats.

Surg. Brown reports: During the week ended July 20, 1912, there were reported at Hongkong 24 cases of plague with 22 deaths.

During the same period there were examined for plague infection 1,273 rats, of which number 6 were found infected.

## CUBA.

### Habana—Inspection of Vessels Clearing for the United States.

Passed Asst. Surg. von Ezdorf reports as follows regarding the inspection of vessels clearing for ports in the United States:

*Week ended Aug. 24, 1912.*

Bills of health issued.....	22
Vessels inspected and passed.....	14
Members of crews of outgoing vessels inspected.....	681
Passengers of outgoing vessels inspected.....	530
Number of vessels certified as complying with paragraph 35, United States Quarantine Regulations.....	11
Vessels fumigated to kill rats.....	5
Vessels fumigated by Cuban authorities under supervision of public health service.....	3
Bills of health issued with recommendation for fumigation of vessel on arrival at United States port.....	4
Passengers individually certified.....	433
Passengers certified after detention at Tricornia quarantine station:	
For New York.....	35
For Key West.....	14
For New Orleans.....	19

### Destruction of Rats—Disposal of Garbage.

Laboratory reports for the week ended August 24, 1912, show 698 rats examined for plague infection. No plague-infected rat was found.

A report of the work accomplished by the special service for rat extermination, organized by the Cuban authorities, for the 10 days August 10-20, is as follows:

Days.	Number squares inspected.	Number rats caught.	Number traps set.	Days.	Number squares inspected.	Number rats caught.	Number traps set.
Aug. 11.....	143	126	350	Aug. 17.....	158	120	362
Aug. 12.....	174	155	383	Aug. 18.....	115	59	394
Aug. 13.....	161	155	396	Aug. 19.....	147	123	341
Aug. 14.....	154	121	354	Aug. 20.....	131	227	392
Aug. 15.....	145	89	324				
Aug. 16.....	151	121	387	Total..	1,479	1,296	3,683

Total number of poisons placed, 18,077.

During the same period of 10 days, 691 fines were imposed for noncompliance with the sanitary regulations regarding covered metal garbage cans.

#### EGYPT.

##### Typhus Fever.

Consul Knabenshue at Cairo reports that during the three weeks ended June 24 there were reported 17 deaths from typhus fever at Cairo and 6 cases with 3 deaths at Port Said.

#### INDIA.

##### Calcutta—Cholera and Plague.

Dr. Allan, surgeon to the American consulate general, reports: During the week ended July 13, 1912, there were reported 19 deaths from cholera and 6 from plague in Calcutta; in all Bengal, 6 cases of plague with 7 deaths; in all India, 277 cases of plague with 204 deaths.

#### ITALY.

##### Cholera in Sardinia.

Cholera has been reported in Cagliari, in the southern part of the island of Sardinia. From August 14 to 27 there were officially reported 16 cases with 5 deaths.

##### Palermo—Typhus Fever.

Consul de Soto reports that during the two weeks ended July 27, 5 cases of typhus fever with 5 deaths were reported in Palermo.

#### MEXICO.

##### Yellow Fever at Frontera.

A case of yellow fever was officially reported at Frontera August 30, 1912.

Sanitary Inspector Eaves at Frontera reports September 3: Yellow fever of grave character exists at this port.

Dr. Liceaga, president of the superior board of health of Mexico, advises August 27, 1912, that the troops of the Thirty-ninth Battalion, who were stationed at San Juan Bautista, and among whom several cases of yellow fever had occurred, were transferred to Frontera and there infected two members of the crew of the Swedish brig *Valkyrien*.

**PHILIPPINE ISLANDS.**

Passed Asst. Surg. Victor G. Heiser, director of health and chief quarantine officer for the Philippine Islands, reports July 30:

**A Case of Plague at Iloilo.**

No further cases of plague have appeared in the city of Manila since the case of June 26.

At Iloilo a case ended fatally at the Mission Hospital on July 5 and was subsequently confirmed as a case of bubonic plague from material collected by Passed Asst. Surg. J. R. Hurley and examined and reported upon by the Bureau of Science. The origin of the case in Iloilo is unknown. It occurred in the person of a Chinaman, who had been a constant resident of Iloilo for a period of at least four months, and prior to that time of Bais, in Oriental Negros. So far as known, no other case of plague has occurred in man or rodents at Iloilo since the American occupation, so that this case is most difficult of satisfactory explanation. A sanitary survey of Iloilo has not shown any unusual mortality among rats.

**Examination of Rats at Manila.**

Over 2,000 rats have been examined in Manila during the past three weeks, and no evidence of bubonic plague has been found among them.

**Cholera Carrier Detected at Mariveles Quarantine Station.**

The cholera carrier previously reported<sup>1</sup> was fully confirmed by subsequent laboratory examination conducted at the Bureau of Science. Since then four other incoming steerage passengers have had vibrios in their stools, but the final examinations showed that they were not the vibrios of Koch.

**Bacillary Dysentery.**

Bacillary dysentery was reported from many provinces in the Philippine Islands, and an investigation made showed that the disease in most instances was due to drinking infected river water or to well persons coming into contact, directly or indirectly, with the sick. Both the Shiga and Flexner types of the bacillus have been isolated.

**PORTO RICO.****The Plague Situation.]**

Since August 27, 4 cases of plague have been reported in Porto Rico. A case in San Juan reported as suspicious on August 29 was finally diagnosed as plague on September 2. One case occurred in Santurce September 3, 1 case in San Juan September 4, and 1 in Santurce September 5. This makes the total number of cases reported to the present time, 53. Since July 19 no case has occurred outside the municipality of San Juan, which includes the old city of San Juan, Puerta de Tierra, and Santurce.

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<sup>1</sup> Public Health Reports, Aug. 16, 1912, p. 1350.

Passed Asst. Surg. Creel further reports as follows:

*Rats examined Aug. 17 to 24, 1912.*

Place.	Rats examined.	Rats found infected.	Rats found suspicious.
All Porto Rico.....	1,124	.....	.....
San Juan municipality:			
San Juan.....	233	.....	.....
Puerta de Tierra.....	102	.....	.....
Santurce.....	255	1	.....

A summary of the plague situation to August 24, including all human and rodent cases reported or discovered, was as follows: Rats examined, 11,209; rats found infected, 60; human cases, 49; deaths, 30.

*Inspections made Aug. 17 to 24, 1912, inclusive.*

Buildings inspected.....	557
Cars inspected.....	133
Packages of freight fumigated.....	711
Packages of freight repacked.....	98
Packages of freight inspected and passed.....	11,467
Oxcarts and wagons carrying outgoing overland freight inspected.....	586
Packages inspected.....	10,954
Packages fumigated.....	24
Packages repacked.....	459
Packages inspected.....	11,437
Express packages inspected.....	546
Express packages repacked.....	189
Rats found in freight and express packages inspected.....	3

#### RUSSIA.

##### Cholera.

During the period from July 14 to 27, 1912, there were reported in Russia 15 cases of cholera with 2 deaths, occurring as follows: City of Astrakhan, 4 cases with 1 death; city of Vitebsk, 9 cases with 1 death; district of Vitebsk, 2 cases.

#### TURKEY IN ASIA.

##### Cholera in Damascus.

Consul General Hollis at Beirut reports August 2:

Cholera has been officially declared present at Damascus. All travelers proceeding by rail from Damascus to any of the Syrian coast ports will be required to undergo a detention of five days in quarantine at some intermediate station.

On September 6 Consul General Hollis reported cholera present at Beirut.

## VENEZUELA.

## Yellow Fever.

Acting Asst. Surg. Stewart, at La Guaira, reports, August 19: During the past two weeks two fatal cases of yellow fever occurred in Maiquetia. Both cases occurred in persons who worked in La Guaira but lived at Maiquetia.

## ZANZIBAR.

## Zanzibar—Examination of Rats.

Consul Weddell reports that during the two weeks ended July 21, 1912, there were examined for plague infection 2,969 rats. No plague-infected rat was found.

## CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX.

## Reports Received During Week Ended Sept. 6, 1912.

[These tables include cases and deaths recorded in reports received by the Surgeon General, United States Public Health Service, from American consuls through the Department of State and from other sources.]

## CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Austria-Hungary: Hungary— Csongrad, district Mindszent.	July 17-22.....	1	1	
China: Amoy.....	June 30-July 6.....		8	July 29 present.
Swatow.....	July 20-25.....	3	1	Among Europeans.
Dutch East Indies: Java— Surabaya.....	May 28-July 5.....	7	3	
India: Bombay.....	July 21-27.....	69	58	
Calcutta.....	July 7-13.....		19	
Indo-China: Saigon.....	July 9-29.....	190	157	
Italy: Sardinia— Cagliari.....	Aug. 14-27.....	16	5	
Japan: Formosa.....	July 7-20.....	6	4	
Russian Empire: Astrakhan.....	July 14-27.....	4	1	
Vitebsk, government.....	July 14.....	27	2	
Vitebsk.....	July 7-27.....	17	2	See p. 1257.
Siam: Bangkok.....	June 16-July 13.....		57	
Turkey in Asia: Beirut.....	Sept. 6.....			Present.
Damascus.....	July 18-23.....	7	4	Present in vicinity.
Do.....	July 31-Aug. 3.....	4	3	

## YELLOW FEVER.

Brazil: Pernambuco.....	May 1-31.....		2	
Mexico: Frontera.....	Aug. 31-Sept. 5.....	2		The 2 cases, Aug. 19, p. 1398, were on the Swedish schooner Valkyrien. Among the military from San Juan Bautista.
San Juan Boutista.....	Aug. 18-24.....	1	1	
Peru: Iquitos.....	July 1-31.....		1	
Venezuela: Caracas.....	July 1-31.....		2	
Maiquetia.....	Aug. 4-17.....	2	2	

## CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received During Week Ended Sept. 6, 1912.

## PLAGUE.

Places.	Date.	Cases.	Deaths.	Remarks.
Austria-Hungary:				
Trieste.....	July 14-25.....	2		In isolation hospital from s. s. Amphitrite from Mersina via Port Said and Alexandria. July 29 present.
China:				
Amoy.....	June 2-29 <sup>1</sup> .....		78	
	June 30-July 6.....		22	
Egypt:				
Alexandria.....	July 13-27.....	3		
Port Said.....	July 17-Aug. 4.....	2		
Provinces—				
Assiout.....	June 27-July 28, ..	2	2	
Behera.....	July 31.....	1		
Beni Souef.....	June 27-July 28.....	1	1	
Charckieh.....	July 3-Aug. 7.....	3	2	
Fayoum.....	July 15-Aug. 8.....	1		
Galioubeh.....	June 4-Aug. 1.....	1		
Girgeh.....	July 2-Aug. 6.....	2		
Minieh.....	July 16-30.....	6	4	Not previously reported.
India:				
Bombay.....	June 21-27.....	19	15	
Calcutta.....	July 7-13.....		6	
Indo-China:				
Saigon.....	July 9-29.....	12	9	
Japan:				
Formosa.....	July 7-13.....		1	
Mauritius.....	June 17-23.....	3	1	
Philippine Islands:				
Iloilo.....	July 5.....	1	1	
Porto Rico:				
San Juan.....	Sept. 2-4.....	2		
Santurce.....	Sept. 3-5.....	2		
SIAM:				
Bangkok.....	June 16-July 13.....		1	

## SMALLPOX.

Austria-Hungary:				
Bohemia.....	July 14-27.....	4		
Galicia.....	July 14-Aug. 3.....	2		
Vienna.....	do.....	1		
Brazil:				
Pernambuco.....	May 16-31.....		20	
Rio de Janeiro.....	June 9-15.....	1		
	July 7-27.....	4	1	
Canada:				
Quebec.....	Aug. 18-24.....	1		
Chile:				
Coquimbo.....	July 28-Aug. 3.....	8		
China:				
Shanghai.....	July 15-28.....	3	1	
Germany:				
India:				
Bombay.....	July 21-27.....	9	9	
Indo-China:				
Saigon.....	July 9-22.....	4	1	
Italy:				
Messina.....	July 1-31.....		1	
Naples.....	Aug. 4-10.....	1		
Palermo.....	do.....	1	1	
Java:				
Batavia.....	July 14-20.....	4	2	
Mexico:				
Mexico.....	July 14-27.....	41	12	
Salina Cruz.....	Aug. 11-17.....	6	2	
Portugal:				
Lisbon.....	Aug. 4-10.....	1		
Russia:				
Irbau.....	July 29-Aug. 4.....	1		
St. Petersburg.....	July 28-Aug. 3.....	5		
SIAM:				
Bangkok.....	June 15-July 13.....		10	
Spain:				
Almeria.....	July 1-31.....		3	
Barcelona.....	Aug. 4-9.....		1	
Cadiz.....	July 1-31.....		1	
Malaga.....	June 1-30.....		3	
Straits Settlements:				
Penang.....	July 14-20.....	1		

<sup>1</sup> From the Veröffentlichungen des Kaiserlichen Gesundheitsamtes, Aug. 6, 1912.

## CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received During Week Ended Sept. 6, 1912.

## SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Turkey in Asia:				
Beirut.....	Aug. 4-10.....	10		
Turkey in Europe:				
Constantinople.....	Aug. 5-18.....		26	

## Reports Received from June 29 to Aug. 30, 1912.

[For reports received from Dec. 30, 1911, to June 28, 1912, see PUBLIC HEALTH REPORTS for June 28, 1912, in accordance with custom, the tables of epidemic diseases are terminated semiannually and new tables begun.]

## CHOLERA.

Ceylon:					
Colombo.....	May 19-25.....	1			In the port.
China:					
Amoy.....	June 16-29.....	9			June 1-20, present in vicinity.
Hohhow.....	July 5.....				Present. The seaport of the island of Hainan.
Swatow.....	June 1-22.....				Sporadic cases occurring in the port. July 13, epidemic.
Dutch East Indies:					
Java—					
Batavia.....	June 16-22.....	1	1		
Rembang, province.....	July 4.....				Present.
Sumatra—					
Bovenlandes, province.....	June 27-July 4.....				Do.
Tapanocel, province.....	July 11.....				Do.
India:					
Bassein.....	May 5-June 25.....	21	18		
Bombay.....	May 19-July 20.....	1,542	1,208		
Calcutta.....	May 5-July 6.....		315		Apr. 21-27, 87 deaths. Received out of date.
Madras.....	May 19-July 20.....	12	9		Madras Presidency, May 1-June 30: Cases, 15,858; deaths, 9,104.
Maulmain.....	May 5-June 25.....	19	19		
Rangoon.....	Apr. 1-May 31.....	34	31		
Indo-China:					
Saigon.....	May 14-July 8.....	348	264		
Japan:					
Formosa.....					Total June 16-July 6: 42 cases 22 deaths. Epidemic.
Kelung.....	June 27.....				
Miyako Islands.....	July 10.....	81			
Russian Empire:					
Astrakhan.....	June 11-July 12.....	2	1		July 19, present.
Vitebsk.....	July 29.....	2	1		
Siam:					
Bangkok.....	Apr. 21-June 15.....		941		
Straits Settlements:					
Singapore.....	May 12-July 13.....	38	35		
Turkey in Asia:					
Provinces—					
Adana—					
Adana.....	May 14-June 15.....	11	6		
Ak Kenpru.....	Apr. 8-June 13.....	12	6		
Ayas.....	June 11-15.....	2	2		
Bor.....	May 28-June 15.....	6	4		
Djihan.....	do.....	11	1		
Dorach Bache.....	do.....	4	5		
Oula Kichia.....	May 28-July 6.....	5	10		
Sis.....	May 28-June 15.....	5	5		
Tarsus.....	May 28-June 17.....	4			
Aleppo—					
Aleppo.....	May 19-July 27.....	297	290		
Alexandretta.....	May 28-June 15.....	7	3		
Amk.....	July 1-6.....	5	4		
Aintab.....	do.....	1	1		
Antioch.....	Apr. 17.....	2	1		
Arka.....	do.....	10	4		
Gisser.....	July 7-13.....	13	6		
Harem.....	June 23-July 14.....	22	27		
Hersem.....	July 1-6.....	5	4		
Idlib.....	June 23-29.....	4	3		
Keudige.....	do.....	4			
Killis.....	June 16-July 13.....		6		
Marach.....	June 15-July 13.....	146	62		
Sarenda.....	July 1-6.....	7	6		
Talachin.....	do.....	3	3		
Mersina.....	June 9-July 28.....	40	33		
Zansibar.....	Aug. 10.....				Present.

## CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from June 29 to Aug. 30, 1912.

## YELLOW FEVER.

Places.	Date.	Cases.	Deaths.	Remarks.
<b>Brasil:</b>				
Manaos.....	June 2-Aug. 3 .....	3	28	
Pernambuco.....	Apr. 16-May 16.....		6	
<b>Chile:</b>				
Toco district.....	May 1-16.....	62	17	
Tocopilla.....	May 1-June 17.....	502	195	Total Jan. 28-June 17: Cases, 1,072; deaths 374, including report, p. 1058, Pt. I.
<b>Colombia:</b>				
Barranquilla.....	July 14-20.....		1	From up Magdalena River.
<b>Ecuador:</b>				
Bucay.....	June 1-15.....	1		
Chobo.....	June 15-30.....	2	1	
Duran.....	May 1-June 30.....	2	1	
Guayaquil.....	do.....	45	27	
Milagro.....	May 16-June 30.....	10	6	
Naranjito.....	May 1-June 30.....	6	4	
Yaguachi.....	May 16-June 30.....	2	1	
<b>Mexico:</b>				
Frontera.....	Aug. 19.....			2 cases on a Swedish vessel.
Merida.....	July 14-25.....	2	1	From Motul, 29 miles distant.
San Juan Bautista.....	June 23-Aug. 17.....	27	6	Total May 4-Aug. 17: Cases 49, deaths 21, including previous reports.
<b>Peru:</b>				
Iquitos.....	Jan. 1-May 31.....		42	Endemic. Year 1908, deaths, 11; 1910, 1; 1911, 76.
<b>Venezuela:</b>				
Caracas.....	May 1-June 30.....		5	July 22, 3 cases from El Valle; 1 case from Villa de Cura about 29 miles distant; and to July 31, 2 other cases.
<b>Cua:</b>				Present.
La Guaira.....	July 20.....			
La Victoria.....	May 1.....	1		
Macuto.....	June 1.....	1	1	Endemic. July 20, present.
Maiquetia.....	June 17-Aug. 3.....	2	2	

## PLAGUE.

<b>Algeria:</b>				
Algiers.....	July 12.....		1	In Hospital El Kettar in vicinity. Pneumonic.
Le Ruiseau.....	July 9-13.....		5	4 miles from Algiers. Pneumonic.
<b>Arabia:</b>				
Aden.....	July 1.....		1	From s. s. India.
Oman—				
Maskat.....	June 1-22.....	1		
<b>Brasil:</b>				
Niteroy.....	Mar. 25.....	8	2	
Rio de Janeiro.....	June 23-29.....	1		
<b>Chile:</b>				
Iquique.....	May 26-July 20.....	17	11	
<b>China:</b>				
Amoy.....	May 20-June 1.....	46	40	May 18-June 15 present in the magistracies of Fungshun, Cayung, and Puning. Present May 18-June 29 in Amoy and vicinity. July 14-20, 8 deaths daily.
Ampo.....	May 18-June 29.....			Present.
Canton.....	May 18-July 7.....			Do.
Chefu.....	June 2-8.....			2 deaths on s. s. Cheongshing between Tientsin and Taku.
Eng Chhun.....	July 6.....			Present. 100 miles inland from Amoy, and prevalent in the surrounding country.
Hongkong.....	May 12-July 20.....	1,342	1,097	
Paokhol.....	May 1-29.....		35	
Tientsin.....	June 2-8.....	1	1	From s. s. Cheongshing from Hongkong.
Wenchang.....	June 4.....			On the island of Hainan, 10 to 20 cases daily.
<b>Cuba:</b>				
Havana.....	July 4-27.....	3	2	
<b>Ecuador:</b>				
Guayaquil.....	May 1-31.....	4	2	

## CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from June 29 to Aug. 30, 1912.

## PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Dutch East Indies				May 12-June 29: Cases, 65; deaths, 56; in the eastern part.
Java—				
Provinces—				
Kediri	Mar. 31-Apr. 6	2	2	
Madiven	do	3	3	
Egypt				Total, June 1-July 2: Cases, 748; deaths, 389, including report p. 1059, Pt. I.
Alexandria	May 27-July 12	8	1	
Port Said	May 29-July 16	5		
Provinces—				
Assiout	May 25-June 27	12	5	
Beni Souef	May 30-June 26	12	9	
Charkieh	Apr. 28-July 2	7	2	
Fayoum	Apr. 28-July 14	49	26	
Galioubeh	Apr. 23-June 3	1		
Girgeh	May 26-July 6	50	42	
Minieh	May 27-July 14	33	7	
Great Britain:				
Liverpool	July 26	1		
India:				
Bombay	May 19-July 20	256	202	
Calcutta	Apr. 21-July 6		428	
Karachi	Apr. 1-June 24	60	60	
Rangoon	Apr. 1-May 31	81	69	
Bombay Presidency and Sind	Apr. 21-June 29	1,878	1,538	
Madras Presidency	do	110	88	
Bengal	do	564	553	
Bihar and Orissa	do	5,346	4,658	
United Provinces	do	7,386	6,900	
Punjab	do	15,865	13,028	
Burma	do	344	318	
Central Provinces	Apr. 21-May 25	283	238	
Mysore State	Apr. 21-June 29	154	123	
Hyderabad State	do	218	176	
Central India	Apr. 21-May 25	276	227	
Rajputana and Ajmere	Apr. 21-June 29	570	474	
Merwara				
Kashmir	do	289	170	Total for India Apr. 21-June 29: Cases, 33,283; deaths, 28,491.
Indo-China:				
Saigon	May 14-July 8	31	19	
Japan:				
Formosa	Apr. 22-July 6	87	68	
Mauritius	Apr. 7-June 16	20	3	
Persia:				
Bushir	May 12-June 15	130	116	Total Feb. 4-June 15: Cases 1,045, deaths 719, including report, p. 1060, Pt. I. June 1-7, on the route to Shiraz, 4 fatal cases.
Philippine Islands:				
Manila	June 14-29	2	2	
Mariveles quarantine station	Apr. 30-May 7	1	1	From s. s. Taisang from Amoy.
Porto Rico				Total June 14-Aug. 16: Cases, 49; deaths, 30.
Arroyo	June 22	1		On the schooner Guillermito from San Juan.
Carolina	June 25-July 19	2	2	
Dorado	July 15	1	1	
Loiza	June 28	1	1	
San Juan	June 21-Aug. 16	21	17	Total June 14-Aug. 16: Cases, 33; deaths, 17.
Santurce	June 22-Aug. 2	11	3	
Russian Empire:				
Districts—				
Ibistchensky—				
Balaptubek	May 15-June 2	2	2	
Karabas	do	5	2	
Do	June 3-16	8	10	
Kudeymula	May 27-June 16	5	5	
Ural—				
Tschelirtinsky	May 20-June 16	13	11	
Siam:				
Bangkok	Apr. 21-May 18		1	

## CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from June 29 to Aug. 30, 1912.

## PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
South Africa: Durban.....				Jan. 14-July 14: Cases 32, deaths 26, including report, p. 1060, Pt. I. Case July 4 confirmed July 14.
Straits Settlements: Kuala Lumpur.....	Apr. 15.....	3	1	
Singapore.....	May 5-June 29.....	16	10	
Turkey in Asia: Adalia.....	May 28-June 13.....	1	1	July 4, present.
Basra.....	May 20.....	1	1	
Jiddah.....	May 18.....	1		
West Indies: Trinidad.....				Total Apr. 1-June 13: Cases 11, deaths 7, including report, p. 1060, Pt. I; 3 of these cases were in Tunapuna.
Do.....	July 2-11.....	2		
Venezuela: Caracas.....	June 1-July 22.....	4	4	
At sea.....	July 15-20.....	3		Ons. s. s. Ezan Maru en route from Milke, Japan, to Hongkong.

## SMALLPOX.

Algeria: Departments— Algiers.....	Jan. 1-May 31.....	23		
Constantine.....	Apr. 1-30.....	4		
Oran.....	May 1-31.....	5		
Arabia: A den.....	June 18-24.....		1	
Australia: Fremantle quarantine station. Townsville.....	Apr. 19.....	1		From s. s. Malwa from London via Colombo. 1 case on s. s. Yawata Maru from Japan.
Austria-Hungary: Bohemia.....	May 12-July 13.....	17		
Galicia.....	do.....	18		
Brazil: Pernambuco.....	Apr. 16-May 15.....		73	
Rio de Janeiro.....	May 19-July 6.....	11	5	
British East Africa: Mombasa.....	May 1-June 30.....	7		
nada: Provinces— British Columbia— Vancouver.....	July 14-20.....	1		
Nova Scotia— Halifax.....	July 7-13.....	1		
Ontario— Ottawa.....	June 9-15.....	1		
Windsor.....	June 12-22.....	2		
Quebec— Montreal.....	June 16-Aug. 17.....	18		
Quebec.....	July 28-Aug. 3.....	2		
Chile: Coquimbo.....	May 26-July 27.....	53	13	Mar. 1-May 1-30 cases.
La Serena.....	Nov. 30-May 7.....	300	40	
China: Amoy.....	May 21-June 8.....			Present in vicinity.
Chungking.....	May 5-June 15.....			Present.
Dalny.....	June 23-July 13.....	2	1	
Hongkong.....	May 12-July 20.....	28	13	
Nanking.....	May 19-July 20.....			Do.
Shanghai.....	May 28-July 14.....	3	15	Deaths among natives.
Tientsin.....	June 2-8.....		1	
Egypt: Cairo.....	May 14-July 8.....	9	4	
Port Said.....	May 14-27.....	2	1	
France: Nantes.....	June 17-July 6.....	4		
Paris.....	June 2-Aug. 3.....	7	1	
Germany.....				Total June 2-Aug. 10: 31 cases.
Great Britain: Bristol.....	June 22-Aug. 3.....	2	1	
Liverpool.....	June 2-8.....	1		
Hawaii: Honolulu.....	July 9-13.....	1		

## CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from June 29 to Aug. 30, 1912.

## SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Honduras.....	July 19-31.....			Present in vicinity of the terminus and along the Honduras National Railway.
La Pimienta.....	July 29.....			Present.
Portorillas.....	July 31.....			Do.
Santa Barbara.....	July 29.....			Do.
Zacapa.....	do.....			Do.
India:				
Bombay.....	May 19-July 20.....	187	156	
Calcutta.....	May 5-July 6.....		17	Apr. 21-27, 2 cases.
Karachi.....	May 19-July 13.....	2	2	
Madras.....	May 19-July 20.....	12	7	
Maulmain.....	Jan. 1-May 4.....		85	
Rangoon.....	Apr. 1-May 31.....	194	73	
Indo-China:				
Saigon.....	May 14-20.....	3	2	
Italy:				
Leghorn.....	June 9-July 6.....	9		
Naples.....	June 2-Aug. 3.....	22	2	
Palermo.....	May 26-July 6.....	4	2	
Rome.....	Mar. 31-Apr. 6.....	1	1	
Turin.....	June 3-9.....	1		
Japan:				
Kobe.....	June 3-23.....	3		
Java:				
Batavia.....	May 12-July 6.....	37	11	
Surabaya.....	Apr. 1-30.....	155	70	June 4-17, still epidemic, but decreasing.
Mexico:				
Aguascalientes.....	June 9-Aug. 18.....		11	
Chihuahua.....	Mar. 11-July 14.....	98	39	
Durango.....	June 1-30.....	1	1	
Frontera.....	July 7-11.....	1		
Guadalajara.....	June 9-Aug. 3.....	7	3	
Guaymas.....	July 14-20.....			Present in small towns in vicinity.
Juarez.....	June 16-22.....		1	
Mazatlan.....	June 19-July 16.....		4	Total Jan. 1-June 30: Deaths, 29.
Minatitlan.....	July 29.....	2		
Mexico.....	May 19-July 13.....	307	146	
Puerto Mexico.....	July 11-29.....	5	2	
Salina Cruz.....	June 29-July 6.....	2	1	
San Geronimo.....	Aug. 1.....			Present.
San Luis Potosi.....	Apr. 7-June 8.....	3	7	
Tehuantepec.....	Aug. 1.....			Do.
Newfoundland:				
St. Johns.....	July 14-Aug. 7.....	7		
Peru:				
Callao.....	May 19-June 29.....			Do.
Portugal:				
Lisbon.....	May 27-Aug. 3.....	34		
Russia:				
Libau.....	May 14-June 13.....		1	
Do.....	June 22-28.....	2		
Moscow.....	May 19-June 22.....	19	3	
Odessa.....	May 19-July 27.....	13	5	
Reval.....	June 1-30.....		1	
Riga.....	June 9-29.....	8		
St. Petersburg.....	May 27-July 6.....	62	20	May 1-31, 2 deaths.
Warsaw.....	Apr. 21-May 25.....	28	12	
Siam:				
Bangkok.....	Apr. 21-June 15.....		62	
Siberia:				
Vladivostok.....	May 17-23.....	1		
South Africa:				
Durban.....	Apr. 28-June 29.....	21	3	
Spain:				
Almeria.....	June 1-30.....		3	
Barcelona.....	July 1-Aug. 3.....		2	
Cadiz.....	May 1-June 30.....		4	
Madrid.....	July 1-31.....		5	
Seville.....	June 1-July 31.....		15	
Valencia.....	June 2-July 27.....	86	4	
Straits Settlements.....	July 14-20.....	2	2	
Penang.....	June 23-July 13.....	3	1	
Singapore.....	May 5-July 13.....	9	6	
Switzerland:				
Berne.....	May 5-11.....	2		
Geneva.....	do.....	1		
Lucerne.....	May 12-18.....	1		
Neuchatel.....	do.....	1		



MORBIDITY—Continued.

Weekly mortality table, foreign and insular cities—Continued.

Cities.	Week ended—	Estimated population.	Total deaths from all causes.	Deaths from—										
				Tuberculosis.	Plague.	Cholera.	Yellow fever.	Smallpox.	Typhus fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
Leeds	Aug. 17		103	8						1	1		1	
Leipzig	Aug. 10	605,755	157	18								2		
Leith	do	81,000	24	3								1		
Libau	Aug. 11	84,000										2		
Liege	Aug. 3	168,780	41	2					1				2	
Liverpool	Aug. 10	752,055	252	19							2	1	17	14
Do	Aug. 17		244	26							2		10	
London	Aug. 10	7,340,079	1,451								6	13	38	
Lubeck	do	100,000	27	4										4
Lyon	Aug. 5	523,796	159	25								3	2	
Manchester	Aug. 10	714,427	164	15								3		2
Mannheim	Aug. 17	202,651	59	10									3	
Mexico	July 20	719,052	400	12				6	6				2	
Do	July 27		360	8				6	2				2	
Monterey	Aug. 11	100,000	62	4						1		1		
Do	Aug. 18		56	6						2				
Montreal	Aug. 24	466,197	194	12						1				
Nagoya	July 20	430,010	143							1		1		
Newcastle-on-Tyne	Aug. 3	269,193	67	3							1			
Nottingham	do	262,563	66	6									4	1
Do	Aug. 10		65	4						1	1		2	1
Odesa	Aug. 3	575,000	24	24						4	3	1	3	3
Ottawa	Aug. 17	90,000	55	2					16					
Palermo	Aug. 19	340,000	157	8				1	9	3	1			1
Paris	do	2,888,110	755	117					5	4	4			
Penang	July 20	102,167	72	14										
Port Limon	July 6	18,195	2	1										
Port of Spain	July 13	60,000	47	7						1				
Rangoon	July 6	293,316	224	13	24	7								
Do	July 13		234	12	26	7								
Rio de Janeiro	do	921,987	416	30				1		1		1	11	
Do	July 20		364	69				1		2		1		
Do	July 27		376	82									7	2
Do	June 15		354	59						1	1	1	3	2
Rotterdam	Aug. 10	441,338	94							1				
Saigon	July 15	250,000	38		7	30								
Salina Cruz	Aug. 17	6,000	10					2						
St. Petersburg	Aug. 3	1,932,400	994	97						36	9	9	47	
Sheffield	July 27	455,000	99	16						1	1	1		
Do	Aug. 3		106	13						2				
Shanghai	July 21	500,000	195	29				1			8			
Do	July 28		171	15				2			5	1		
Do	Aug. 4		213	15							4	1		
Southampton	Aug. 10	120,896	21							2			1	
Do	Aug. 17		29	3								1		
Stettin	Aug. 10	240,000	107	6								1		
Stockholm	Aug. 3	346,599	87	16									2	
Stoke-on-Trent	Aug. 10	237,153	52	2								1		1
Tapachula	July 7-23	30,000	152	3						5				
Tientsin	Aug. 3	465,000	23	2								1		
Toronto	Aug. 24	392,000	125	9									2	
Tripoli in Barbary	Aug. 11	50,000	44	2						1				
Vienna	Aug. 3	2,081,335	502	84							2	2	5	1

<sup>1</sup> Received out of date, see p. 1313.

**MORTALITY—FOREIGN AND INSULAR—COUNTRIES AND CITIES (Untabulated).**

ALGERIA—*Algiers*.—Month of June, 1912. Population 180,000. Total number of deaths from all causes 291, including measles 3, tuberculosis 66, typhoid fever 4.

Month of July, 1912. Total number of deaths from all causes 286, including measles 5, plague 2, tuberculosis 44, typhoid fever 2, typhus fever 1.

**AUSTRALIA**—*Newcastle*.—Month of June, 1912. Population 50,000. Total number of deaths from all causes 44, including tuberculosis 1.

**BRAZIL**—*Ceara*.—Month of June, 1912. Population 60,000. Total number of deaths from all causes 145, including tuberculosis 19, typhoid fever 8.

**CHILE**—*Punta Arenas*.—Month of June, 1912. Population 14,000. Total number of deaths from all causes 18, including tuberculosis 1.

**DUTCH GUIANA**.—*Paramaribo*.—Month of July, 1912. Population 85,891. Total number of deaths from all causes 120. No contagious diseases reported.

**FRANCE**—*St. Etienne*.—Two weeks ended July 15, 1912. Population 150,000. Total number of deaths from all causes 108, including diphtheria 1, measles 3, tuberculosis 11.

**GREAT BRITAIN**.—Week ended July 27, 1912.

*England and Wales*.—The deaths registered in 95 great towns of England and Wales correspond to an annual rate of 11.3 per 1,000 of the population, which is estimated at 17,639,881.

*Ireland*.—The deaths registered in 21 principal town districts correspond to an annual rate of 15.2 per 1,000 of the population, which is estimated at 1,157,014. The lowest rate was recorded at Queenstown, viz, 6.6, and the highest at Newry, viz, 34.9, per 1,000.

*Scotland*.—The deaths registered in 18 principal towns correspond to an annual rate of 13.1 per 1,000 of the population, which is estimated at 2,182,400. The lowest rate was recorded at Ayr, viz, 4.7, and the highest at Dundee, viz, 17.7, per 1,000. The total number of deaths from all causes reported was 547, including diphtheria 4, measles 12, scarlet fever 3, typhoid fever 3.

**MALTA**.—Month of June, 1912. Population, 215,332. Total number of deaths from all causes 358, including measles 1, tuberculosis 16, typhoid fever 1.

**MEXICO**.—*Puerto Mexico*.—Month of July, 1912. Population, 5,000. Total number of deaths from all causes 25, including smallpox 2, tuberculosis 2.

**RUSSIA**.—*Riga*.—Month of May, 1912. Population, 385,000. Total number of deaths from all causes 665, including diphtheria 5, measles 13, scarlet fever 4, smallpox 2, tuberculosis 96, typhoid fever 3, typhus fever 1.

**SPAIN**.—*Madrid*.—Month of July, 1912. Population, 591,598. Total number of deaths from all causes 1,267, including diphtheria 25, measles 22, scarlet fever 1, smallpox 5, tuberculosis 133, typhoid fever 15, typhus fever 1.

**TURKS ISLANDS**.—Three weeks ended August 17, 1912. Population, 1,675. One death, no contagious diseases.

By authority of the Secretary of the Treasury.

RUPERT BLUE,  
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